The Builder.

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The Liverpool Cathedral Question.

WE mentioned in our issue of December 7, when giving Mr. Bare's plan for a rearrangement of the proposed cathedral site at Liverpool (page 511 *ante*), that we had reason to believe that there would be a more systematic opposition to the scheme of the Cathedral Committee than they could well afford to overlook. Since then we have received from the "Liverpool Cathedral Petition Committee" a pamphlet containing their views, and a collection of opinions extracted from various papers and periodicals, in opposition to the Cathedral Committee's proposals, and accompanied by a letter in which they specify the line of action which they intend to take, and their reasons for it. With the pamphlet is bound up a plan of a portion of the city of Liverpool, of which a reduced copy will be found on the next page (fig. 1), and which is intended to show the specially advantageous position of what is called the Monument-place site, the one favoured by the Petition Committee.

The name which is assumed by this committee indicates the line of action which they intend to take if it should become necessary. A Bill in Parliament will be required to authorise the Cathedral Committee to take the St. James's Mount site for the proposed cathedral, and the opposition committee has been formed with the intention, if persuasion and public opinion fail to produce any effect, to petition Parliament against the Bill. The position which the Petition Committee take may be best set forth in their own words:—

"The Petition Committee are not antagonistic towards the erection of a cathedral in Liverpool if it is to be placed upon a suitable site and to be of a worthy character; but they will, as far as they are able to do so, strenuously oppose the foisting upon the nation of a poverty-stricken new cathedral, a site even for which the promoters of the scheme allege they cannot afford to purchase at a comparatively few pounds per yard.

If it be true, as alleged, that there cannot be a cathedral at all unless upon a practically free site, its cheapness due to the deprivation of the citizens of Liverpool of one of the few public recreation-grounds and open spaces which still remain within the heart of the city, then, in the name of the true religion of the nation, the Petition Committee protest against such holding up of the nation to international scorn; and they say 'in that case, better no cathedral.'"

Some of the expressions used in the above quotation may be thought rather exaggerated; but with the closing words we are entirely in agreement. The Cathedral Committee do not understand their business, and have gone into the matter in a wrong-headed and totally ignorant manner from the first. They commenced by entirely ignoring the architect whose design was practically selected in the first competition, and who had every right to expect that he would be the first person consulted in any revival of the scheme for a cathedral for Liverpool. By asking for designs in a special style, and that style the Gothic, they showed themselves entirely out of touch with modern thought and principle in architecture, as well as oblivious of the fact that the requirements of modern worship are in some very important points quite different from those which a mediæval cathedral was built to serve; and on this point of demanding a special style they have been compelled formally at least to give way, though we fear that they are not less determined to select a mediæval design when the time comes, or to select as final competitors those architects who are obviously mediæval in their architectural faith and tendency. They have persisted, in the face of unmistakable expressions of public opinion, in selecting a site which affords no proper view of or approach to the cathedral, and where it would be out of the way of public notice and convenient access—a site, in fact, in which a first-class building, if obtained, would be entirely thrown away; and all this on the miserable ground of economy; as if there could be any use in the world in attempting to build a cheap cathedral. We hear, from private sources, that the Cathedral Committee calculate, after having obtained their cheap site, on erecting the building for 350,000*l*. If they think that anything worthy of the name of a first-class cathedral can be carried out for that sum they are wofully mistaken—not a penny under the half-million will do it. And is Liverpool, one of the largest and most important cities in the kingdom, to be put off with a second-class cathedral? We do not think that public subscriptions will be forthcoming, on any large scale, in support of such a *fiasco* as this would be. The question does not concern Liverpool only; it concerns the whole country, and more especially all those who are interested in modern English architecture. The manner in which this proposed cathedral is carried out, in regard to scale, style, and design, will have a very important bearing on the advance of modern architecture in this country, and more especially, of course, on church architecture, which at present is by no means in a satisfactory condition.

Turning to the plan which we have reproduced, we may point out the peculiar advantages of position which the Monument-place site affords. It is very near the largest and most central railway station, the London and North-Western terminus at Lime-street; the one by which nearly all visitors from the capital would arrive; for the Midland Railway route from London to Liverpool, though a picturesque, is a roundabout one, and takes considerably longer to travel over. The principal road eastward out of Liverpool, with a tramway route, runs past the north side of the site. The cathedral could be built there with the usual orientation, its entrance front facing west and the choir to the east, while on the site proposed by the Cathedral Committee it is admitted that the building would have to be built with its longer axis north and south; and though, as we have before said, this point is not of the first importance, it has a sentimental value to a good many people, and it would certainly seem a pity that the cathedral should form the one exception among English cathedrals to the east and west position. But the architectural advantages of the Monument-place site (if indeed that of aspect may not be counted among them) are even more important. As will be seen from the plan, the main route

Fig. 1.

from the landing stage at the river would lead directly up to the cathedral, and leads past the Town Hall, the Municipal Offices, St. George's Hall and the group of the Art Gallery and Public Library; so that the cathedral would in this sense be placed in relation with the other principal architectural monuments of the city, and it would be visible from the point between St. George's Hall and the Library group, which may be called the architectural centre of the city, and would have in front of it a wide street leading right up, centrally, to its main façade. The monument, of course (if retained), would have to be moved so as to be on the axis of the cathedral: it is not shown so on this plan.

The St. James's Mount site does not come into this map; it is situated considerably more to the south, and those who know Liverpool will remember that it is not on any important line of route, nor would the cathedral be grouped or connected with any other of the leading buildings of the city. The plan of the site and its approaches, which we also reproduce from the Petition Committee's pamphlet (fig. 2), shows only too plainly how completely unsuited is the site for any architectural effect for a large cathedral. There is no road leading up to it; nor point from which an effective distant prospect of it can be obtained, and its west side (what is ritualistically the south side) faces a collection of poor and narrow streets. As far as architectural effect is concerned there could not be a worse site for an important building, and it is in an out-of-the-way neighbourhood. To build a new cathedral in that situation in Liverpool would be the same kind of thing as if we were to build a new one in London in an out-of-the-way square in Bayswater. The distance from the most important centres is not so great, of course as that would be—distances are so much greater in London; but that supposition conveys about the nature of the site in relation to the more prominent and frequented portions of Liverpool. This should be understood, because subscriptions will no doubt be sought for from the country generally as well as from the Liverpool neighbourhood, and it is no use subscribing towards what, though a cheap cathedral, will for that very reason be a costly mistake.

It may be useful here to reprint the petition to Parliament which the Petition Committee propose to present should all other means of persuasion and argument fail in inducing the Cathedral Committee to change its course. It is as follows:—

"*Objections to the Present Scheme for a Cathedral in Liverpool.*

The following are some of the objections to th present scheme for a cathedral in Liverpool, viz.:—

1. That the site selected, known as St. James' Mount, is—

NOT CENTRAL;
NOT READILY ACCESSIBLE;
NOT COMMANDINGLY PROMINENT;
WITHOUT VISTAS.

2. That the site selected is a public garden and recreation ground.

That it is an open space.

3. That the ratepayers of Liverpool would be practically contributing to the cost of the cathedral were St. James' Mount site granted at the price suggested.

4. That there is available a site, known as Monument-place site, which possesses none of the above

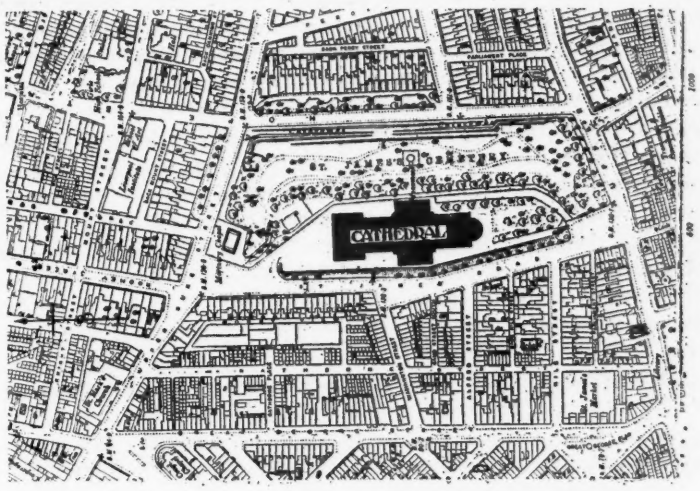


Fig. 2.

objections, and is, in fact, the site originally selected by the Cathedral Sites Committee.

5. That Monument-place site is central, is readily accessible by road, rail, or tram from every part of the Diocese of Liverpool, and is near to the principal railway stations, and within easy distance of the Landing Stage.

6. That Monument-place site is commandingly situated, physically; abuts upon the London-road, which is the main thoroughfare in and out of Liverpool, and is passed daily by thousands of people in following their ordinary vocations.

7. That there is a vista extending for nearly half a mile, which would be terminated by the west end of the Cathedral, were Monument-place site adopted; and the Cathedral would form the crowning feature of lines of streets, over a mile in length, commencing at the landing stage and river-side station, and passing the following public buildings, viz.:—

Town Hall;
Municipal Offices;
Government Buildings;
New General Post Office;
Magistrates' Courts and Police Offices;
Technical Schools;
Brown's Museum;
Free Library;
Picton Reading-room;
Walker Art Gallery;
St. George's Hall;
Queen Victoria's, Wellington's, and other monuments.

Whilst in close contiguity with the site are:—
The Royal Infirmary;
The Liverpool College;
The University College.

8. That the methods adopted by the Cathedral Committee for obtaining a design for the Cathedral are unlikely to result in the best design being obtained, and consequently the money of the subscribers would not be expended to the best advantage."

The Petition Committee have sufficient funds in hand to enable them to lodge a petition, but they will not do so unless they feel assured of the support of the country generally, by having guaranteed to them sufficient funds to conduct an exhaustive and effective enquiry, if necessary, into the whole case; they have no wish to oppose the Cathedral Committee except with a view of ensuring that the cathedral to be erected in Liverpool shall be a noble structure, and placed upon the best site. They would therefore be glad to have the views of subscribers, of architects, and of the general public, on the whole subject, and the line of action which they are proposing to take in reference to it. We shall be very glad to find room in our columns for any correspondence on the subject from those qualified to deal with it.

NOTES.

Wireless Telegraphy.

WE see no reason to doubt the statement made this week that Mr. Marconi has succeeded in sending signals through space from Cornwall to Newfoundland. We know that messages have been sent hundreds of miles over the sea by very ordinary apparatus, and hence it is not incredible that the very powerful apparatus used by Marconi should have sent signals thousands of miles. The Hertzian waves following the contour of the ocean must lose very little by absorption. The experience gained in South Africa showed how rapidly the waves were absorbed when passing over dry soil, and hence this kind of telegraphy will probably be mainly used for over-sea working. What is still wanted, however, is a proper system of tuning. Marconi's system of tuning is only partially successful; his receiving instruments successfully disentangle two messages sent simultaneously from two separate sending instruments, but both messages are received on any other instruments between the two stations. What is wanted is a system of perfect tuning, so that the message sent out by a particular instrument will be read by a particular receiver and by that receiver only. We are aware that several electricians are experimenting in this direction, but most of them seem to do their tuning by trial and error. It seems to us that a better way would be actually to measure the capacity to earth, and the inductance of the receiving and sending apparatus respectively. Then if the product of these two quantities is the same the instruments are in tune, no matter how they differ in other respects. Unfortunately very few practical men know how to measure or to calculate either capacity or inductance, although methods of doing both are fully described in Dr. Fleming's recent "Cantor Lectures on Wireless Telegraphy."

The S.C.A.P.A. Society.

THE Society for Checking the Abuses of Public Advertising held a special meeting on Monday last, to receive the formal resignation of their former President, Mr. Alfred Waterhouse, rendered necessary by his ill-health. The Society in great measure owes its existence to Mr. Waterhouse, who as President spared no pains to assist its objects both by his influence and advice, and by cordial and punctual collaboration at its meetings; and a letter of gratitude and sympathy with him was read and passed, and the hon. secretary requested to communicate it to him. In his place Dr. Longstaff has been elected President, and a better choice could hardly have been made. Dr. Longstaff has been a member of the Society from the first, and is greatly interested in its objects; and his businesslike character, as well as his important position in the London County Council, will probably enable him to render valuable assistance to the cause. The Society has already accomplished more than could have been expected during the comparatively short time that it has been in existence, considering the great phalanx of prejudice and of commercial interests against which it has had to contend; and by being the indirect means of leading the Dover Corporation to obtain an Act for regulating advertisements and sky signs, it has established a precedent which other municipalities may well be invited to follow. The subject is of special importance just at the time when so much is about to be done in London in laying out and building new streets. If we are to expend money in improving and adding to our street architecture, let us at least provide that it shall not be spoiled and vulgarised by the hand of the advertiser.

Projected Improvements in Paris.

IT is proposed to extend the already lengthened perspective of the Avenue des Champs Elysées, which stretches from the Tuileries to the "rond-point" of Courbevoie (where stands Ernest Barrias' monument "De la Défense"), by a great avenue from the latter point to the Seine, between Bezons and Nanterre—that is to say, to the extreme boundary of the Department. On the right bank of the river the lugubrious St. Lazare prison, of unhappy memory, is to give place to a new square to be formed on its site. These are the principal operations comprised in a large scheme for new works recently submitted to the Conseil-Général of the Seine, and which will involve an expenditure of 180 million francs.

Aluminium Alloys.

THE paper on the physical properties of certain aluminium alloys recently read by Professor E. Wilson, of King's College, to the Institution of Electrical Engineers contains many data which will prove of the greatest use to electricians. The purest commercial aluminium contains traces of iron and silicon, so that practically the metal is always used in its alloyed state. Pure aluminium is bulk for bulk less than one-third the weight of copper, its co-efficient of expansion by heat is 50 per cent. greater and the resistance it offers to an electric current is 60 per cent. greater. A copper wire a square inch in section will break down when it supports a weight of 64,000 lbs., but 28,000 lbs. will break an aluminium wire of the same section. Professor Wilson has made exhaustive tests on twenty-four samples of aluminium wire, each of which has been alloyed with 1 or 2 per cent. of various metals. When alloyed with 2 per cent. of copper the breaking load is increased to 40,000 lbs., and the electric conductivity is increased 20 per cent. Hence it seems to us that for electrical purposes an aluminium alloy containing about 2 per cent. of copper would be very much more useful than pure alu-

minium. On increasing the percentage of the copper in the alloy very little is gained in either tensile strength or conductivity. An alloy containing 1·3 per cent. of nickel and 1 per cent. of copper gave a breaking load of 46,000 lbs., which was the highest figure obtained. Its conductivity, however, was low. Professor Wilson's experiments prove that for use as overhead conductors whether for telegraphic or power purposes, several of the alloys he describes are superior to copper. Although the arts of soldering and welding aluminium are now well known, yet the construction of mechanical joints has been so perfected that there are power transmission lines in America nearly a hundred miles long where only mechanical joints are used. For equivalent conductivity aluminium is slightly cheaper than copper; still, as the world's output of the former is only about 2 per cent. that of the latter, fluctuations in the price of aluminium will not have much effect on the price of copper.

Telegraph Wires.

THE wholesale destruction of telegraph connexion by the recent storm emphasises in a very complete way the need for the gradual abolition of overhead wires on trunk lines, for the stoppage of telegraphic communication is positively for the time a national trouble. It is obvious that the more numerous wires become the heavier is the load which the poles have to bear when, as in the recent storm, the wires become covered with moist snow, which presently freezes, causing a heavy and compact mass to extend from pole to pole. There is really no difficulty about underground wires in rural districts and along railroads, but we suppose it will require another storm or two before the necessity of the abolition of overhead wires becomes clearly apparent to the Postmaster-General. We hope that in the ensuing Session attention will be called to this important subject.

Chorlton and Manchester Asylum Competition.

WE may commend to the notice of architects who patronise competitions the invitation of the Chorlton and Manchester Joint Asylum Committee to architects, now appearing in our advertisement columns, to submit designs for a proposed new set of "colony" buildings to be erected on a site of some 165 acres of land at Langho, near Blackburn, to receive the imbeciles, idiots, and epileptics—sane and insane—now in the workhouses of those two Poor Law districts. The scheme, which is to comprise accommodation for some 700 or 800 patients, has some points about it that are quite novel in this country, at least so far as number of patients and diseases is concerned. The arrangement of the accommodation is to be in a series of "homes," each holding from 25 to 50 or 60 patients, the "homes" being grouped in "villages" for the respective classes instead of a range of large buildings on the usual asylum plan. There is but little information to be gathered as to the working of this new system from existing institutions for the classes of patients in question in this country; but the system has been in operation for some years in Germany and also in the United States, and it is described, with more or less detail, in "The Care and Treatment of Epileptics," 1900, and "The Insane in Foreign Countries," 1889, by William P. Letchworth, LL.D.,* and is briefly referred to in Mr. Gordon Smith's recently published book on Poor Law buildings. The Joint Committee have prepared a creditable set of conditions and instructions to competitors; they offer three prizes—200*l.*, 150*l.*, and 100*l.*—for the best three designs; they promise the work to the author of the best design (provided he is able to satisfy them as to his ability, fitness, and experience); and they have engaged Mr. Gordon Smith to advise with them in the selection of a design. The plans are to be drawn to one-sixteenth scale, to be delivered in portfolios—not on straining frames—and no perspective views are to be sent in. Four months are allowed for the preparation of designs, and altogether the competition appears to deserve success.

The Pimlico Gas-works, Bessborough-street.

IN the course of next February the Gas Light and Coke Company will offer for sale at the Auction Mart, Tokenhouse-yard, their property, being for the greater portion freehold, by the riverside at Pimlico. The gasworks, with offices, workmen's dwellings, weighbridge, &c., cover an area of 4 acres, having a wharf frontage of 320 ft. to the Thames and a tunnel underneath Grosvenor-road. The buildings stand between Bessborough-place and Pulford-street, on the north-eastern side of St. George's-square. The gasworks were originally established there about seventy-five years ago on the two banks of the Tyburn, near Vauxhall Bridge. In an excellent map surveyed and drawn by W. B. Clarke, the architect, and published in 1836, the "gasworks" and "gas factory" are plotted as lying on the northern and southern banks, respectively, of the Tyburn stream, just above its outfall into the river at Thames Bank Wharf, in (old) Millbank, since renamed Grosvenor-road. The stream at that point ran by the Sluice-house, and the King's Scholars' Pond from which the sewer afterwards took its name.

"Bunyan's Chapel," Southwark.

AN old timber-built tenement in King's-court, Great Suffolk-street, will shortly be demolished. It stands opposite the site of the Bridewell that was built *circa* 1773 upon Hangman's Acre, where is now the junction of Friar and Hill streets. The house was taken just 100 years ago by a congregation who had separated themselves from the Baptist community in Union, formerly Duke, street. A tradition is current that Bunyan sometimes preached in the meeting-house in King's-court, as well as in that belonging to his friend Dr. Thomas Barlow, in Zoar-street, Slutswell (since Gravel-lane), in the course of his frequent visits to London.

Japanese Cloisonné Enamels.

AT Willis's Rooms, St. James's Mr. Ando has had on view a fine collection of Japanese cloisonné enamels, mostly his own work. The most interesting piece was a small model of a mandarin duck by Ando, a masterpiece of enamel colour. In the same case was a cloisonné silver vase decorated by a group of gold fishes in water, beautifully drawn in transparent tints. A pair of vases of "wireless cloisonné" showed a charming composition of a winter view with crows and snow-covered bamboos in cold greys. The many other examples by the same artist illustrate his skill in obtaining delicacy and depth in all his colours rather than success in their use in design, and we wish for that conventionality and subtlety of composition which is so characteristic of the best Japanese art. The gradation of tone, the clever use of copper and silver backgrounds, and the pure transparency of the enamel necessary to give these their full value are proof of his mastery of the materials used. The use of wireless cloisonné, and its combination with wired and embossed details, are shown in many examples with varied success. There is a tendency to break away from the best traditions of the art, an influence which cannot fail to bring its quota of failures when exercised by an artist of such versatility. When Mr. Ando has felt the limit of his palette, we hope to see his work again. A pair of large vases by Gonda, decorated with autumn shrubs and birds, all wired on a black background, are splendid pieces, drawn and coloured with marvellous lightness. An incense burner by Honda, of conventional design and restrained tints, shows a true feeling in colour. In some of the other examples by Honda we also miss that spontaneity of balance which is wanting in some of Ando's compositions. Than Japanese there is no art more sensitive to the unfitness of outside influence, and it will be a dark day in its history when it allows an overstraining after the popular and the new to break through and spoil its purity, reaping only that benefit which is won by the cupidity of commercialism.

Bridges in Landscape.

A CORRESPONDENT writes to us that we have done an injustice to Mr. Pittman, the winner of the Turner gold medal at the Royal Academy, by describing his picture as representing Putney Bridge and its neighbourhood, and accusing him of not having done justice to the bridge, as his scene really represented new Battersea Bridge. This we find is correct, but the mistake would not have been made if the bridge had been more correctly represented in the picture. The composition, with a suspension bridge in the distance and a stumpy church tower on the left, we took to be a view up the river, with Hammersmith Bridge in the distance and Putney Church on the left; it appears it is a view down the river, with Chelsea Suspension Bridge in the distance and Chelsea Church tower on the left. But the point is that Battersea Bridge is a bridge with stone piers and steel spans, and there was no indication of this in the picture; the bridge seemed all of one material, whatever it was; and that is exactly what we complained of; landscape painters treat a thing like a bridge without giving any indication of its structural character. Turner himself, no doubt, would have done the same; but that does not make it right. A more curious thing, from our point of view, is that an artist who had, by the terms of the competition, a choice of any of the Thames bridges as the central object of the composition, instead of selecting one of the really fine stone bridges, should have chosen such a piece of tawdry sham structure as Battersea Bridge, a thing which is a horror to every architect. This is no disparagement to Mr. Pittman's picture as a whole; it is a fine work with much future promise; it is the bridge alone that we

*Putnam's Sons, New York and London.

object to. A bridge, if introduced into a landscape, should at least appear to have some structural character, and not be treated as if it were cut out of a piece of cheese.

THE ETHICS OF DILAPIDATIONS.*

THE cause of dilapidations is the improper use or improper care of premises. Now a man usually takes a house or a shop or a factory on lease to use the building for the purpose it was built for, or for which it has become adapted.

When I see some schedules I think, had the tenants known what was in store for them they would have hardly dared to inhabit the premises. Now when a man hires an article under the ordinary conditions he has a right to the reasonable use of it for the purpose that caused him to hire it. I believe if a man hires a horse for hunting, the purpose is known, and should the horse be killed the hirer is not liable for the cost. Again, if I hire a bicycle I do not expect when I return it to the shop that the man will go carefully all over the frame to see if there is the slightest chip off the paint and then to demand the cost of re-enamelling the whole machine; neither do I when I return it expect to have the cost of cleaning it added to the hire, even though the day has turned out wet and the cycle is covered with mud. If I puncture or break anything, certainly I pay.

Why should not a man have the same rights when using a building as he has when using a bicycle? In other words, has he a right to ordinary wear and tear? What is the meaning of "fair wear and tear"? If ever a phrase were invented to trouble surveyors, that is the one. I tried hard to find some origin or derivation of wear and tear, but could not do so, finally I wrote to the editor of "Notes and Queries" and explained that "wear and tear" was constantly used with reference to substances that one could not, from the nature of them, "tear," *e.g.* stone paving, and could he help us to find out how the expression had become general. The reply I received was this:—"A proverbial locution such as this ceases naturally in time to be confined to its first signification, and becomes a synonym for use."

I am afraid that does not help us very much. I looked up some law authorities with little result. A law dictionary defies wear and tear as "the waste of a substance by use," a good definition, but not touching the accepted meaning of the words taken singly. Woodfall is silent on the subject, so is Macer; Banister Fletcher refers to machinery.

The only case I can find on the subject is Scales *v.* Laurence (2. F. & F., 289). There was no express covenant to paint in certain years, the tenant had well and sufficiently to repair, uphold, sustain, paint, glaze, cleanse, scour, and keep and leave the premises in such repair, reasonable wear and tear excepted. It was held that if the tenant had repaired within a reasonable time before leaving, he was only bound, in addition to the repair of actual dilapidations, to clean the old paint, &c., and not to repaint.

Surveyors differ as much as possible, one man will contend that the phrase, "fair wear and tear excepted," will, like Charity, cover the multitude of sins his client may commit, and another surveyor will say the words mean just nothing at all, and they might as well be omitted.

What is a "fair tear?" One, of course, thinks of wall papers in connexion with tearing, and I know of no fair tear unless it be a nail hole for hanging pictures, which a tenant has a perfect right to make.

For "it is a monstrous thing to say that because a person puts nails into the walls of a house he must take them out and fill up the holes, or commit a breach of the covenants of a repairing lease" (Perry *v.* Cholzner, 9 T.L.R., 488).

But surely every tenant should have a right to the ordinary wear and tear of the premises leased to him, no matter what the covenants may be, special or general.

And whether we admit this principle or not, we certainly accept the idea, because if a floor or paving is only worn we do not ask for a renewal. But in making surveys we should not accept this matter of renewal as an inviolable rule. We ought to be governed far more than we are by the locality and character of the premises, and to consider carefully the purpose they are used for, and more particularly if they are used in accordance with the intention of the parties at the time of the demise. We are too fond of taking rules for survey from some one else, the pupil works according to his master's ideas, too often formed and set, he starts practice and uses the same rules, never thinking out the subject for himself. Or, perhaps, he hears that some authority, a well-known surveyor, has a certain rule, and he at once adopts it, and is glad to do so, and always quotes his authority, "Mr. So-and-So does, so and so do I. What is good enough for him is good enough for me," &c. I refer to such rules as asking for a window to be reglazed if cracked across from opposite sides, but to pass it if the crack is across a corner. Or, again, to condemn a chimney-stack or wall if it is so many inches out of the upright in so many feet, or to always ask for regraining if the premises have been grained previously, and entirely without reference to the covenants.

All these matters and many others should not be governed by a universal rule, but should be thought out with reference to the age, locality, and character of the property, but having, of course, due regard to the covenants.

Let me give two instances. Take the case of a house built and let when new and perfect as a school or factory. In the course of a few years the sills of the entrance doors will be worn away, we will say some inches, and form that inverted-arch appearance we often see. Although there is no actual breakage, that wearing away has been done by the proper use of the building for the purpose for which it was let and is no dilapidation. But if a house in the West-end, also newly constructed, is let for domestic purposes, and the sills become worn almost away, in consequence of the house being used for meetings, business, or charitable purposes, for which it was not leased, I contend that a surveyor would be justified in considering the sills in the latter case to be dilapidations, although not broken, and even though they be far less worn away than the sills at the school which he should pass.

A better instance is, perhaps, a staircase in a school or a factory; the treads would naturally become very much worn, the building being used, and properly so, for business purposes, and the wear is a perfectly right one, but if a house in Grosvenor-square had a staircase with treads even less worn, I think a surveyor would be entitled to consider the defect a dilapidation, because in the latter case it is usual to cover the stairs with carpets and so avoid almost any wear, the treads at the end of the term should be in practically as good a condition as at the commencement.

This brings me to another accepted tradition, if a tread is worn away at the edge the rule is to ask for a new nosing. The surveyor writes, "Renew nosings to treads" in almost any building, but although that may be a good remedy for a defect in business premises it is not a proper remedy for high-class residential property. A nosing to a tread never fits properly; where it joins the tread, it may be the same thickness near the strings; but in the middle, where the tread becomes worn, there is a difference in the thickness, and there is a sharp edge for about a foot or more in the length. This is felt when walking on the staircase, and when carpets are laid down, in a very short time they get worn along this line, and the money that should have been expended in properly repairing the staircase is thrown upon the cost of renewing the stair-carpets, and the outlay increased considerably. Again, the joint always shows at the side, whether the margins are painted or not, and is unsightly. I contend that a new tread in good property should be asked for. But even if much more worn in business premises, that even a nosing cannot be claimed.

With regard to this damage to business premises when legitimately using them, I had an instance not long ago at a factory for binding books. The building was let for that purpose; it was an old building in the City, and never had been and never could be used except as a warehouse or factory; there were benches all along the walls, and when the paper was held in the hands of the workers for binding, the glue had dropped on the floor. Each floor was marked from end to end with a ridge of glue some inches high. I had this glue carefully cleared away, and, to remove it properly, it had to be chipped off the floor with a chisel. The result was the floor showed the chisel marks and was uneven and stained, but nowhere worn through or broken. I acted for the lessee, and contended that, as a warehouse or factory floor, it was in a good condition. The surveyor for the lessor asked for a new floor to be laid along the part in question. There could be no dispute that an incoming tenant might not take the building as it was, because of these stains and marks. In a private house his demand would have been a proper one, but in this case I consider it was not.

I have a case of dilapidations going to the Courts shortly in which I act for the lessor. It is a factory, and had I estimated on the above lines, my estimate would be three or four times the amount it is, and I should not like to face cross-examination.

These remarks also refer to the class of work that one may pass. It is wrong to expect the best paint or other work in inferior property, and to refuse to pass it unless it is up to a high standard (Proudfoot *v.* Hart).

In this paper please do not think I hold a brief for the tenant; but there seems to be a general tendency at the Courts to deal lightly with a lessee, and surveyors are following this inclination at a distance. I want to draw attention to a few matters quite impartially.

One rule seems to be adopted by the profession with regard to casement windows when the wood sill and the lower ends of the frame and mullions have become rotten. I think the recognised custom is to ask for a new sill, and to cut off the rotten parts of frame and splice them and make good to the sill. What is the result? You have a nasty splayed joint showing through the paintwork on each side. If a frame has become defective from want of paint that the lessee should have applied, surely he ought to renew the whole article and not patch it. This applies also to sash frames and frames of external doors. But this is not always done. We as a profession allow this patching, and I suggest we should not do so. We should not do so in other cases. If my coat is torn by a stranger I want the cost of a new coat. I cannot agree to his suggestion that it is only a little tear, and his tailor will stitch a bit in the middle of the back, and it will not show much. Neither will the patched window last as long as a proper whole although old one. This is not a case that should vary with locality, it is a defect in the structure arising from neglect, and should be properly remedied. At the same time, if the rot occurs where it cannot be avoided, as in posts to field gates, then a repair should be passed. Rotten casements and sashes are sometimes passed if repaired by angle irons securing the work which has become dilapidated and worthless. This should not be allowed any more than we should allow zinc or lead to be nailed over a rotten sill.

The surveyor's lot is often a difficult one. For many weeks past I have been employed surveying property that has been neglected for very many years—it is not a case of lessor and lessee, but somewhat similar—and it is extremely difficult to decide in cases of very bad structures when to allow for repairs and when to estimate for entirely rebuilding.

Now one very serious, because expensive, part of our work deals with repairs to brickwork and the question of rebuilding. The portion of premises usually under observation in making a survey are:—

1. Parapets out of the upright.
2. Chimney-stacks out of the upright.
3. Bulged walls.

Day after day surveyors go to buildings, note a leaning over of the parapet or chimney stacks, and without a moment's hesitation note down the item and ask for rebuilding. It is their rule, they never think about it; *why* they should do it, there it is, a fact, out of the upright, and the note is made, "Take down so many feet, &c."

Now let us look a little into this. If the building is a new one I think we can agree that these defects are caused by the bad construction of the property, and if old it is only carrying the argument a little farther to see that had the building been constructed in a stronger manner the defect could not have occurred a the date of the survey. I assume that he tenant has pointed the wall, that is all in the ordinary way he could do to repair brickwork, and if a parapet is

* A paper by Mr. Sydney Perks, read before the Architectural Association Discussion Section on the 6th inst.

too thin no amount of pointing will keep it upright. I believe the usual cause of parapets leaning over either towards the house or away from it is the thrust in consequence of the construction of the roof. If the parapet is well built in at the ends it will lean inwards; we often see a long length of parapet wall 9 in. thick with a heavy stone coping upon it. So in most cases, and in fact in almost any case, the result of the defect is in no way due to the neglect of the tenant; he has not gone and shoved over the wall or the chimney stack, and caused the necessity of rebuilding. Surely the reason is the defective construction and age of the building, it is the natural result of time. If the parapet had been thicker it would not have needed rebuilding. To stand properly, all parapet walls in long lengths should be at least 14 in. thick, but they rarely are. I contend that when a structure or any part of it needs renewing, the cost should fall on the owner, if the tenant has not caused the damage or allowed it to take place.

I know it is argued that a tenant not only agrees "to repair," but he also covenants to "support, uphold, and maintain," and this rebuilding is necessary to fulfil those covenants, which it is contended, must mean something. My plea is that unless the defect can be shown to be the result of the tenant's neglect, that he should not be asked to rebuild any portions of the property badly, or not sufficiently strongly constructed to last his term. With regard to this I will ask you to kindly note the wording of the judgment in the case of "Lister & Lane," which I shall presently quote.

The same principle applies to bulged walls; they are rarely the result of neglect, nearly always of age or bad construction and the wearing of the building. It may be that the tenant has overloaded the floors or done something to cause the bulge, and if so he should be liable, but if liable he should not be simply asked to tie in the walls with iron rods, he ought to make good his damage by cutting out and properly rebuilding.

I referred just now to a new house where the walls become out of plumb, and contend that there should be no difference between a comparatively new and badly-built house, and an old and better built house. The end must come some day; a time will arrive when each must cease to exist; and as all men do not live to the same age, so all buildings do not last for the same period, and a house badly built and ten years old may be nearer to its end than one well-built and 100 years old, so I think we must not consider age as the same number of years in every case.

But although what I have said may be simply argument and the opinion of a surveyor, we get a step farther when we go to the law reports. There is one great case on the subject, and that is "Lister and another *v.* Lane and another" (T.L.R., C: A., vol. ix., p. 503).

The following extracts are taken from the *Times* law reports.

"Where there is a general covenant to repair, the age and general condition of the house at the commencement of the tenancy are to be taken into consideration in determining whether the covenant has been broken."

The Master of the Rolls said: "If a person took a house which was such a house and of such a kind that by its own inherent quality it would in course of time fall into a particular state, that would not amount to a breach of covenant to repair the house, however large the covenant might be," &c.

In this case the covenant was to "sufficiently and substantially repair and keep in repair, uphold, sustain, and maintain." Certainly a strong undertaking. The case was doubtless a very bad one, the building was condemned as a dangerous structure, but I think we surveyors should consider it in less important cases. Please also note that such covenants must be construed according to the intention of the parties at the time it was entered into, also that the tenant was asked to underpin the property, and "such work did not come within the covenant to repair."

I have recently had a case of a house—part of one of the old Inns of Court, a building almost historically old, and so decrepit that it was beyond alteration, and was pulled down at the end of my client's term; the walls were bulged and tied in several places, but the surveyor of the freeholder asked me to take down and rebuild all bulged portions, some of the ties were in, I am certain, for very many years before the lease was granted, the wall was fairly well pointed and no improper thrust was exercised, for the rooms had been empty for years. I think the demand was most improper. I tried to get the matter referred to any surveyor appointed by the Royal Institute of British Architects, but my suggestion was refused.

In Gutteridge *v.* Munyard (1 Moo: & R. 334) C. J. Tindal stated: "Wherever an old building is demised and the lessee enters into a covenant to repair, it is not meant that the old building is to be restored in a renewed form at the end of the term, or of greater value than it was at the commencement. What the natural operation of time flowing on effects, and all that the elements bring about in diminishing the value, constitutes a loss, which, so far as it results from time and nature, falls upon the landlord; but the tenant is to take care that the tenement does not suffer more than the operation of time and nature would effect; he is bound by reasonable application of labour to keep the house as nearly as possible in the same condition as when it was demised. If it appear that he has made that application, and laid out money from time to time upon the premises, it would not perhaps be fair to judge him very vigorously by the report of a surveyor who is sent upon the premises for the very purpose of finding fault."

This case was previous to Lister *v.* Lane, and Woodfall's paragraph on this subject is as follows:—

"Where a lessee covenants to keep *old* premises in repair, he is not liable for such dilapidations as result from the natural operations of time and the elements, and with a view to determine the relative sufficiency of repair the jury may consider whether the house was new or old at the time of the demise, and what was its *then* state of repair and condition *generally*, not in detail. These principles are carried to their full extent by the Court of Appeal in Lister *v.* Lane. There the covenant was to 'repair, uphold, sustain, and maintain' a house in Lambeth more than 100 years old built on a timber platform resting on a boggy soil, with the result that a wall bulged and the foundation sank so that rebuilding became neceseary. It was held that the tenant was not liable, inasmuch as the dilapidations were due to the inherent defect of the house."

I also note that in Woodfall's reference to Proudfoot *v.* Hart he states: "In every case the age of the premises, and also their class and general condition, must be taken into consideration in order to measure the extent of repairs to be done."

Please also note that in Proudfoot *v.* Hart not only is the age of the property insisted on, but also the character, which does not mean locality, because locality is also mentioned, and both are defined. I think character means something apart from the distinction between a cottage and a palace, and we are not stretching a point if we say this also refers to the difference between a jerry built house and a well built house. This, I think, is also clearly indicated by the case of Gutteridge *v.* Munyard.

There is the idea with many surveyors that if a man takes a badly built house on a lease with strong repairing covenants he is a fool and must pay for his folly. The man is a fool, but I do not think he should suffer for what he has done in ignorance, and I think the cases I have given also indicate that principle. The severity of a schedule should vary according to the class of property surveyed.

I spoke just now of our accepting other surveyors' rules and adapting them without thought; but another and, perhaps, worse fault is that we read the results of cases and never read the decisions—we are content with a few lines or extracts in a text book.

There has been a tendency among surveyors to smile at some of the decisions in the courts because some trifling slip is made by the judges with reference to practical details. I wonder if the leading surveyors know as much about law as the leading lawyers know about surveying, and doubt it very much.

If we want to grasp the meaning of a case we must read the whole judgments, and, when carried to the Court of Appeal, we must follow the reasoning from court to court, and if there be any here who have not done so I hope you will, if only in a few instances—it will not take long—look up "Crawford *v.* Newton," "Proudfoot *v.* Hart," and "Lister *v.* Lane." All went to the Court of Appeal.

Proudfoot *v.* Hart is most important, and deals with the likely requirements of a reasonably minded person, but touches on many things. It refers to Belcher *v.* Mackintosh and tells us tenantable repair, good repair, and habitable repair all have a similar meaning.

It refers to Payne *v.* Haine and tells us not to expect repairs to be equally well done in all localities, and touches on the age and class of properties and to the "purpose for which they are used," it also refers to Muntz *v.* Goring, stating the tenant must fulfil the covenant according to the nature of the premises, &c.

When surveyors complain that the legal decisions are difficult to apply, and grumble at them as vague and inexact, I think they want a little too much. The more general the wording is the better, and that is where the skill of the surveyor (which is a very different thing to the knowledge of a builder's estimating clerk) comes in. We must have the knowledge to estimate, but we must also have a certain amount of law knowledge and power to decide how to properly apply it. For it is hard, very hard, to conscientiously say what should be done under certain covenants, we find that out when acting as arbitrators. When we act for the lessor, the rule is, when in doubt "claim it," and if acting for a lessee, the reverse. But only if there is any doubt.

I say "when in doubt," for there should not be many points we cannot decide, and to me nothing stamps a surveyor and shows his ignorance so much as badly-prepared schedules of dilapidations. We find them worded in exactly the same way as specifications for repairs, which is wrong; and the surveyor claims quite irrespective of the covenants, which you doubt if he has ever seen, anything that occurs to him as he goes over the house is jotted down, his only anxiety seems to be the risk of omitting anything that the lessor might like to have done to improve his property.

In conclusion, a few words about surveyors and arbitrators. If difficulties occur where acting for lessee or lessor, I have shown just now what to do, but those difficulties must be met and decided when we act as arbitrators. As a rule I find that when surveyors refer to me there is usually some great difference in the interpretation of the lease. It is not a question of prices, but of principle, *e.g.*, one surveyor will claim for entire painting, the other surveyor will say none is necessary under the covenants, and so on. I had a case recently where one surveyor's estimate was six or seven times as much as the other. Each estimate was correct according to the view taken of the meaning of the covenants. In cases like these do not be weak, do not go on that jury system of splitting the difference, if you can help it, and please do not make each party pay his own costs unless in special cases. This question of "costs" is doing us harm. More than one solicitor has said to me, "I will not refer anything to a surveyor, he is sure to go wrong over the costs." Another solicitor said a short time ago, "I will never refer a dispute to a surveyor unless he is bound to make the costs follow the event." Only a few months ago I was in a case of a disputed builder's account. I suggested at once to refer it to a surveyor. My client's solicitor told me he did not like the idea, he had no faith in references to surveyors; and the solicitor for the other side flatly refused. The result was it was referred to a barrister. I imagine from his remarks he had no knowledge whatever of technical details.

Dilapidation surveys are not absolutely necessary, and if the lessor employs a surveyor to make a schedule he should be prepared to pay his fee. This employment of a surveyor is different to party-wall cases: then the adjoining owner *must* appoint a surveyor if there is a difference. It is compulsory by Act of Parliament, and it is only just that his neighbour, who makes this employment a necessity, should pay for it; but in dilapidation matters there is no such necessity.

Consequently I was surprised recently to be asked for my client, the lessee, to pay the fees of the lessor's surveyor "as usual." "As usual" I believe the practice is not to do so. I know, of course, that under certain conditions named in "the Conveyancing and Law of Property Act, 1892," the lessee has to pay, but the instance I had was the usual one at the termination of a lease.

I am ashamed to say that some surveyors do not act fairly for the lessor when you want to settle on behalf of the lessee before the end of the term. You see them about six months

or more before that time with a view to a settlement, and failing that you leave plenty of time to do the work. You are met in a courteous manner; no schedule has been served, but you are assured that a survey will be made as soon as possible. Nothing is done, and time goes on, the object being to keep delaying the matter so as to make a money payment compulsory; depriving the tenant of his option to do the work, and also with a view to claim rent for the time the work would take to carry out. You may have met such a surveyor, and you may be a sharp man, but he is a sharper, and you must be on your guard.

I sincerely trust I have been able to mention a few matters you may think worthy of discussion, and I look forward to hearing your views.

THE ARCHITECTURAL ASSOCIATION.

THE usual fortnightly meeting of the Architectural Association was held on Friday evening last week, in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, W. In the unavoidable absence of the President, Mr. W. H. Seth-Smith, Mr. R. S. Balfour, hon. secretary, was voted to the chair.

The minutes were read and confirmed, and Mr. E. Cooper was elected a member of the Association.

The Chairman announced that a meeting of the Discussion Section would be held on Friday, the 20th inst., when Mr. H. Howard Humphreys would read a paper on "The Manufacture, Testing and Uses of Portland Cement."

New Premises Fund.

The Chairman also announced that the following additional donations had been made to the New Premises Fund, viz.: Mr. A. W. Soames, M.P., 25*l.*; the Hon. A. McGarel Hogg, 5*l.*; and Messrs. John Slater, 26*l.* 5s.; E. T. Hall, 20*l.*; B. T. Batsford, 10*l.* 10s.; W. A. Pite, 10*l.* 10s.; the executors of the late T. Satchell, 10*l.* 10s.; H. A. Satchell, 10*l.* 10s.; Captain W. B. Marling, 10*l.*; G. C. Ashlin, 5*l.* 5s.; H. B. Creswell, 5*l.* 5s.; W. Woodward, 5*l.* 5s.; R. H. Weymouth, 3*l.* 3s.; H. Cayley, 2*l.* 10s.; H. Lovegrove, 2*l.* 2s.; Cole A. Adams, 1*l.* 1s.; E. A. Agutter, 1*l.* 1s.; and S. J. Tatchell, 1*l.* 1s. The total amount received or promised exceeds 3,000*l.*

Travelling Students' Notes.

The Chairman then called on Mr. J. D. Tate to read, in the absence of the author, the Travelling Students' Notes for 1901, by Mr. J. E. Forbes. It was stated that Mr. Forbes, who devoted his tour to a study of Oxford buildings, had been unavoidably detained in Birmingham.

The writer of the paper, in an introductory paragraph, said he was aware that he was out of order in treating the subject in an historical rather than an architectural manner, but his reason for doing so was that, in his opinion, in order thoroughly to appreciate the architecture of Oxford one must first acquire the atmosphere of the place—its legends, origin, and early history. Of architectural Oxford so much was familiar to all, and so much had been written and said, that it would be quite unnecessary for him to repeat facts that were so well known to all interested in architecture.

The paper opened with an account of the legend of St. Frideswyde, and the opinion was expressed that round the priory which was raised in her honour sprang up, in all likelihood, both the town and the schools, developed by gradual successes to a general resort for students. The author then referred to the "chest," the earliest form of corporate property possessed by the University for the relief of poor scholars. They continued to exist and multiply until the end of the fifteenth century, when they had reached the number of twenty-four. Each chest was in charge of two guardians, and was 8 ft. to 10 ft. long and half as wide, and all the chests contained volumes and valuables deposited as pledges by those who had borrowed from them. Reference having been made to the libraries, the author dealt with mediæval college life; the Presbyterians and Independents, who began to appear in the seventeenth century; college life in the eighteenth century (including an account of the coffee houses of the period); a reference to some of those who were to become notable men of England; a description of Shelley's rooms; some remarks on "sporting the oak," and a few remarks as to the differences in college life in old and new Oxford.

Mr. E. W. M. Wonnacott then showed more than fifty very fine lantern slides of Oxford buildings and views.

Mr. N. F. Barwell proposed, and Mr. H. J. Leverton seconded, a vote of thanks to Mr. Forbes for his paper, and to Mr. Tate for reading it.

The Chairman said that Mr. Forbes was the A.A. Travelling Student for 1901, and he was aware that the Committee were not in sympathy with the line he had taken in regard to the preparation of his paper. Mr. Forbes was invited by the Committee to read a paper giving an account of his tour, and he told the Committee that he expected in doing so to provoke some criticism by the comparatively unorthodox character of his paper. In occupying the chair that evening, and in asking them to accord Mr. Forbes a vote of thanks, he did not wish to do more than express his personal feeling of regret that Mr. Forbes had not taken them more into his confidence in regard to his impressions while on tour and as to the character of his studies. Mr. Forbes said that so much was known about the architecture of Oxford that it was quite unnecessary for him to repeat facts already well known. He (the Chairman) entirely disagreed with that view. Mr. Forbes confessed in that either that he was unobservant, and that he had not received any impression from his tour (a conclusion which they could not accept), or that he was so modest that he felt he was unworthy to record anything about the work he did while away. He thought they would agree that Mr. Forbes had mistaken his audience in the matter, and that they would have been more interested in his personal records and achievements during the last summer than in what he had written. What one student could tell another was of considerable interest, and the exchange of ideas between students could never be tiresome to any one. He had listened to the paper with much interest, but not from a practical point of view.

The vote of thanks was then agreed to, and the meeting terminated.

The next meeting will be held on January 3, when Mr. J. A. Gotch will read a paper on "The Development of Domestic Architecture from the Twelfth to the Eighteenth Century," with lantern views.

POST OFFICE LONDON DIRECTORY.

THE Post Office London Directory for the ensuing year—the 103rd annual issue of the work—has just been published. No new features have been introduced in the Directory, and, as we have previously remarked, it is not obvious to us that anything could be done to improve it. It has been corrected down to the latest possible date in the careful manner that has characterised previous issues. It now contains 3,356 pp., which is an increase of thirty-five pages over the edition of 1901. The publishers are Kelly's Directories, Ltd., 182-184, High Holborn.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Mr. A. M. Torrance, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend St. Pancras Borough Council 5,510*l.* for sewers and paving works, and 6,310*l.* for electric light installation; Westminster City Council 32,000*l.* for purchase of land; Woolwich Borough Council 700*l.* for site for a library; Guardians of Greenwich Union 5,600*l.* for purchase of property; Kensington and Chelsea School District Managers 550*l.* for enlargement of lodge; and West London School District Managers 2,500*l.* for provision of a boiler, &c., at schools.

Bricklayers' Work.—Lord Welby, Chairman of the Finance Committee, in reply to a question, said the Works Sub-Committee had collected a good deal of information as to the amount of work done by the bricklayers in the Council's employ, but it had been impossible to go through it and report before the recess.

Strike at Horton Asylum.—Lord Welby also stated that he had received a letter from the Council of the Operative Bricklayers' Society, stating that, if the Council would open the works at Horton at once to the workmen, the strike would be ended.

The Works Department.—The Finance Committee submitted a statement showing the estimated and actual cost of works completed by the Works Department during the half-year ended September 30. The whole of the works completed during the half year were included in the statement, but the Committee stated that the total gave no indication of the turnover of the Department during that period, because some of the expenditure on the works occurred previous to the half-year in question, while, on the other hand, a large part of the expenditure during the six months was upon works still unfinished. The approximate expenditure on estimated works for the half-year was 147,000*l.* The statement dealt with twenty-one works, the final estimate of which was 103,620*l.* 16s. 2d. The actual cost was 118,162*l.* 5s., showing a balance of cost above final estimate of 14,541*l.* 8s. 10d. In thirteen works there was a saving on the final estimate amounting in all to 2,434*l.* 17s. 2d. In the other eight works there was a loss on the final estimate, the greatest being in the case of the North Woolwich drainage works, for which the final estimate was 47,683*l.* 17s. 6d., and the actual cost 64,398*l.* 1s. 2d. A further statement was presented showing the results of all works executed by the Works Department since its creation in November, 1892. With regard to estimated works, the grand total of the final estimate was 1,260,092*l.* 13s. 4d., and the actual cost 1,338,937*l.* 9s. 10d., showing the balance of cost above estimate to be 78,844*l.* 16s. 6d. With respect to jobbing works since April 1, 1895, works of the schedule value of 192,025*l.* 13s. 2d. have been executed at an actual cost of 180,876*l.* 12s. 7d., leaving a balance of cost below schedule value of 11,149*l.* 0s. 7d.

Lord Welby asked that the Report should be postponed till after the recess, and this was agreed to.

At a later stage of the sitting, a report of the Housing of the Working Classes Committee on a proposed lodging-house at Deptford was considered. The Committee recommended "that the working drawings, specification, bills of quantities, and estimate of 51,500*l.* submitted by the Finance Committee in respect of the lodging-house to be erected on the Mill-lane area, Deptford, be approved; that the work of erecting the house be carried out by the Council without the intervention of a contractor; and that the working drawings, specification, bills of quantities and architect's estimate of 47,750*l.* be referred to the manager of works for that purpose."

To this Sir John Dickson-Poynder moved to omit all words after "approved," and the following substituted: That the work of erecting the house be done under contract, and that tenders be invited for the execution of the work.

The Committee, in their report, stated that:—

"In pursuance of instructions the architect prepared a plan of a men's lodging-house on the lines of those already erected by Lord Rowton. The area is triangular in shape, and the plan showed that a building of this kind could be erected on the deeper portion of the area, and that the building would provide accommodation for 670 persons. The shallower portion of the area would still be left, and upon this we were advised that cottage dwellings could be built. Without committing the Council to the erection of such a house on the Mill-lane area we obtained the approval of the Local Government Board to this plan, but before bringing the question of the kind of dwellings to be erected again before the Council, we thought it well to ascertain how far a lodging-house of the character mentioned would be likely to be beneficial and successful if erected on the site. We accordingly communicated through our then chairman (Sir John Dickson-Poynder) with Lord Rowton and Sir Richard Farrant, and they generously intimated their willingness to place their unique knowledge and experience at our service. After having discussed with them very fully the question of the erection of such a house, we were convinced that the site was an exceedingly suitable one for the erection of a men's lodging-house similar in character to those known as the Rowton houses. Both Lord Rowton and Sir Richard Farrant emphatically stated that the most economical number to provide for was 800 lodgers, and that in order to make the house a success it was essential that it should contain all the comforts and improvements which are the characteristics of a Rowton house, whilst the architect informed us that these could only be provided by making a charge of 6d. per bed per night.

As this is the first lodging-house on these lines that the Council has attempted, no doubt a somewhat detailed description of the plans of the house will be useful. Accommodation is provided for 804 lodgers, as

compared with 800 and 805 in the Newington Butts and Hammersmith Rowton houses respectively. The entrance and principal rooms on the ground floor are arranged as follows:—The entrance is central, and gives access to the dining-room on the right and to the smoking and reading rooms on the left. The office commands the entrance for lodgers and for the staff, and is arranged close to the superintendent's quarters. The dining-room is planned with a long hot-plate chamber in the centre, with lodgers' sculleries. It is well lighted from side and roof. The hot-plate chamber is ventilated by two fans driven by electricity, and this arrangement helps the ventilation of the dining-room. Immediately adjoining the dining-room is the lodgers' crockery-room. The shop for sale of hot and cold viands is placed in a convenient position with a direct servery thereto, and with easy communication to the kitchen in the rear. The smoking-room is arranged on the Mill-lane frontage. It is well lighted and has good cross ventilation. The reading-room is approached from two of the main corridors. It is of a suitable shape and it is well lighted by side and top lights. This room also will have cross ventilation. . . . With regard to the sleeping accommodation, two principal staircases leading to the dormitories, and one emergency staircase, are provided. It will therefore be practically impossible for all egress from the house to be blocked in the event of fire. Each cubicle is 4 ft. 10½ in. wide and 7 ft. 4½ in. long (internal dimensions), and is provided with a window, so that ample means of through ventilation are secured. Two cubicles on each floor will be occupied by the resident male staff. The dormitory corridors are 4 ft. 6 in. wide, and four water-closets and two sinks for night use are provided on each of the five dormitory floors. The lodgers' promenade is provided over the reading room and part of the dining-room, and is approached by means of the south-west staircase. Throughout the preparation of the plans we have had the advantage of the advice and assistance of Lord Rowton, whose courtesy and kindness in the matter we wish to heartily acknowledge. The architect's estimate of the cost of the building as above described is as follows:—Cost of building (including clearance of site, trial holes, superstructure and foundations, special works, electric lighting, provisional amounts, &c.), 49,287*l.* 15s.; architect's expenses, quantity surveyors' and other fees, supervision, provision for articles to be bought direct and incidentals, 2,212*l.* 5s.; making a total of 51,500*l.* We have referred the drawings, specification, quantities and architect's estimate of the cost of building (47,750*l.*) to the manager of works for examination and report, and he has informed us that he is prepared to undertake the work of erecting the house at this amount. In these circumstances we propose that the work should be done by the manager of works."

Sir J. Dickson-Poynder, M.P., said he was greatly disappointed that it was proposed to hand this work over to the department. There was no doubt the Council were running some risk in the erection of such a building, and he felt that in giving it over to the Works Department they were dooming it to failure, or at least running a very great risk of it being a failure. No fair-minded man in the Council could say that the Works Department had been a success, or that it warranted them in allowing such a work to be carried out by direct labour. He asked them to throw off insincerity and affectation, and admit this fact. There was no doubt that the reason of the non-success of the direct labour policy was that trades union restrictions, always excessive, became absolutely extreme in connexion with a body like the London County Council. Trades unions could be kept in check by contractors; but the Council pandered to them, and, consequently, it was impossible that the Department should be a success. Lord Rosebery told them the County Council was just emerging from unpopularity; but he (the speaker) felt that if they continued the policy of direct labour they would again decline into extreme unpopularity.

Mr. A. T. Williams seconded the amendment as a business man with a practical training. He declared that the methods of those responsible for the Works Department were enough to make a business man's flesh creep.

Mr. Campbell supported the amendment, and remarked that, considering the amount written off the land, it was absurd to talk of the house being built on a self-supporting basis.

Dr. Collins said the mover and seconder of the amendment had indulged in a diatribe against the direct employment of labour, but that was not the question before them that day. Coming to the question as to whether this building should be erected by the Works Department, he saw nothing unreasonable in the recommendation of the Committee. In view of the figures of the present management of the Works Department, he saw no reason why that Department should not carry out the work. He was not an out-and-out opponent of contractors, but he believed it best to have both contractors and direct employment, so that they could have an opportunity of stepping in if there was reason to suspect collusion amongst the contractors.

Colonel Rotton asked the Chairman of the Committee whether he believed the lodgings could be let at 6d. a night if the work was carried out by the Works Department, and, secondly, whether it could be carried out as expeditiously by the Department as by a contractor.

Mr. Howell J. Williams said that Sir J. Dickson-Poyndor had been unfortunate in his selection of a case. The Rowton House Company did not employ contractors, but had adopted a system of direct employment of labour; why, then, should not the Council do the same? Two years ago the department was kept without work, and, now that enormous capital had been sunk in it, it was absurd to think of putting a check upon it now that it was in full swing. This was a work in which there was much repetition work, and it was one which the Department would be well able to carry out. Still, the Department was not on a satisfactory basis. The Council imagined that it employed its own labour, but it did so only in a sense. They found the capital, but the work was hindered by hostile influences. What private owner who wanted to build a mansion would allow one or two clerks of works to hinder the successful carrying out of the work? The cause of the want of success of the Works Department was the hostility of clerks of works to the Council doing its own work.

Mr. H. P. Harris said he would admit that the Council had a mandate to have a Works Department, but he took it also that the Council had a mandate to have an efficient and economical Department. In the case of work for the Main Drainage Committee, if a loss was made it only fell on the unfortunate ratepayer, but the consequences were more serious to the Housing Committee, which had to make its accounts balance. It was time a protest was made, for they had these facts before them. Of the works carried out by contractors for the Housing Committee they had been done for 15,000*l.* below the architect's final estimate. On the other hand, the Works Department, in the work they had carried out for the Committee, had exceeded the measured value by 25,000*l.* If he thought the Works Department would be inquired into he was prepared to call a truce, but unless that was done they must go on protesting.

Mr. Fletcher expressed the opinion that the only way in which this lodging-house could be made a success was by allowing it to be built by contractors.

Mr. Burns, M.P., denied the truth of the charge that workmen limited their output when employed by Municipal Authorities. Direct employment of labour under the Council had given the ratepayers better work, and the men better wages and safer conditions of labour. The Works Department was founded on the delinquencies of the contractors and not at the demand of the trades unions. With fair criticism and honest clerks of works, the results of the operations of the Department would be better in the future than they had been in the past. The Department had been crippled by enemies within and without. If the men scamped their work the remedy was to dismiss them.

Mr. W. Peel, M.P., said he was glad to see that a change had come over the opinions of the labour bench as to the Works Department, and as to the evils and sins of contractors. Apparently, Mr. Burns was now persuaded that the Department was not as efficient as it might be. For the last three or four years the Progressives had said the Works Department must be reorganised, but they had not made the slightest attempt to improve it. Yet when complaints were made they met criticism with the same old answer, that they would reorganise the Department, which they desired to go on although losses were made. It almost seemed as if the policy of the Progressives was to house the Works Department instead of the working-classes.

Mr. White said there was a great deal of truth in the published assertions as to restriction of the labour output. The Main Drainage Committee, in asking for a large excess vote, said:—"It would appear that the excess is principally due to the large expenditure on labour, and we understand that all the men engaged on the work, with one exception, were discharged for not doing their duty to the Council."

Mr. Waterlow, Chairman of the Housing Committee, pointed out that there was at present far more work in the hands of the contractors than there was in the hands of the Department. As to the proposal now under discussion, if the recommendation were agreed to the Department would be able to start work at least two months before a contractor if the work were put out to contract, and he saw no reason why the Department should not do the work expeditiously and so as to make it pay. He should vote for the Committee's recommendation on the distinct understanding that the Department was to be improved, and that very shortly.

Mr. Crooks said he and his party had sympathy with labour, but not with loafing.

The Council divided, and the amendment was defeated by 84 votes to 28. A further amendment, requiring a fuller report from the committee on the financial bearings of the scheme, was negatived by a show of hands. The committee's recommendation was then adopted.

Houses of Historical Interest.—The report of the Historical Records and Buildings Committee relating to the indication of houses of historical interest in London, which we printed in our last issue, was discussed.

Mr. Beachcroft moved the following amendment:—"That the recommendation be referred back to the Committee for further consideration, the Council being of the opinion that the undertaking of work of this kind should be avoided as far as possible, as tending to discourage the efforts of societies and associations now working voluntarily in the public interest." He thought, unless they had a Committee of Taste, it would be very difficult to carry the Committee's proposal out.

Mr. H. Lawson seconded the amendment on the ground that there was no reason why the Council should go about and seek fresh obligations.

After some further discussion the Council divided, and the amendment was defeated by 54 votes to 46. The recommendation was then agreed to.

The Government and the Fire Brigade.—The Council adopted a recommendation by the Finance Committee to protest against the proposed action of the Treasury in regard to stopping the annual subvention of 10,000*l.* in aid of the Metropolitan Fire Brigade, and to point out that the inspection of fire appliances in many Government buildings was gratuitously performed by officers of the board.

South Metropolitan Gas Burners. Mr. Organ asked the Chairman of the Public Control Committee to state what steps the South Metropolitan Gas Co. had taken to supply and fix, free of charge, burners suitable in all respects for the consumption of gas of the illuminating power prescribed in their Act of last year.

Mr. W. C. Johnson replied that the company obtained power to reduce the illuminating power of their gas from sixteen candles to fourteen candles, on condition that they supplied and fixed, free to consumers, burners suitable for burning the gas of lower power. The company had given notice to consumers that they would supply such burners to any consumer who asked them to do so, but many consumers had not applied. It was important that the public should know that the old burners were not suitable for the gas now supplied by the company, and that consumers would save money and obtain better light by obtaining the new burners from the company. Some of the burners which had been issued by the company were governor burners, and were very satisfactory, but the company also issued other burners which were not so suitable or satisfactory when the gas is burnt at a high pressure, and consumers should, therefore, ask for governor burners in every case.

The Control of the Erection of Wooden Structures.—Mr. Goddard Clarke, Chairman of the Building Act Committee, stated, in reply to questions, that the decision of the Divisional Court in the test case brought by the Westminster City Council against the London County Council placed the obligation for the safety of wooden structures upon the Borough Councils, but that the County Council still controlled the erection of iron structures.

Technical Institutes.—The Technical Education Board reported as follows:—

"The Governors of the Hackney Institute have

accepted a tender for the erection of the first block of buildings in connexion with the technical institute for Central Hackney at Hackney Downs, on a site, part of which was transferred to the Governors by the Charity Commissioners, and part taken over from the North-East London Institute. The designs, which were prepared by Mr. Arthur W. Cooksey, were selected from a limited competition by Mr. Thomas Blashill, late Superintending Architect of the Council, who acted as assessor. The first block of buildings will provide a physical laboratory with electrical testing-room, mechanical laboratory, chemical laboratory, balance-room, preparation-room, lecture theatre, drawing-office, and six classrooms, in addition to a boiler-room and other facilities. The block forms about one-quarter of a complete scheme of buildings for which plans have been prepared and which will completely cover the site. . . . .

The contract drawings for the Poplar Technical Institute are complete, and are about to be submitted to the Quantity Surveyor. It is estimated that about five weeks will be required for taking out the quantities, so that we expect that the estimate for submission to the Works Department will be available at the end of January.

The contract drawings for the new Brixton Technical Institute have been completed, the specification is now being prepared, and the drawings and specification will be sent to the Quantity Surveyor before the end of the present month. It may be anticipated that the estimate for submission to the Works Department will be available about the third week in January."

The Criterion Theatre.— The Theatres and Music Halls Committee reported that they had for some time past given careful consideration to the question of the structural condition of the Criterion Theatre, Piccadilly, and its suitability as a place of entertainment from the point of view of the public safety. The building was originally intended for use as a small concert-hall, and only after the entire carcase was erected was it decided to convert the premises into a theatre :—

"In 1899, in accordance with our practice of making a thorough survey of the older places of public entertainment, a complete inspection of the theatre was made by the Council's officers, and as the result we considered certain suggestions for improving the premises. The architect and chief officer of the Fire Brigade, however, when these proposed alterations were before us, reported that the site of the theatre was such as to render it quite unsuitable for use as a place of public entertainment, and in the circumstances we saw no alternative but to acquaint the Lord Chamberlain with this opinion. . . . We did not see our way when asked by the Lord Chamberlain for an opinion on the theatre to ignore the important question of the site, and we, therefore, informed his lordship on February 21, 1901, that, subject to the disability inherent in the site, the lessee appeared to be ready to make almost every possible arrangement to promote the safety of the public. In reply the Lord Chamberlain stated that he would be glad to understand whether the Council withdrew its letter of October 18, 1900, which would have practically made it necessary for him not to renew the licence in future for the theatre. After again considering the whole of the circumstances of the case we informed his lordship that we regretted our inability to withdraw the letter referred to, but that we had communicated to Mr. Wyndham the fact that we should be prepared to consider any plans or scheme which, in his opinion, would make the building safe in the event of a fire. We were subsequently informed on October 1, 1901, that the Lord Chamberlain had granted a full licence for the theatre 'upon Mr. Wyndham giving an undertaking to comply with the Council's suggestions in a manner to be agreed upon on further discussion with the Council forthwith, and a fire-resisting curtain to be fitted to the proscenium opening without delay.' Since that date proposals have been submitted by Mr. Verity on behalf of Mr. Wyndham for improving the theatre, and both these gentlemen appeared before us at our meeting on the 4th inst., and undertook to carry out all the alterations which were suggested in October, 1900, as the result of the examination of the theatre made by the Council's officers. For this purpose property will be purchased on the Jermyn-street side of the theatre which will enable exits to be provided sufficient to give ample and direct egress to the street. It was pointed out to us that it was very important the Lord Chamberlain and Mr. Wyndham should know our opinion of the theatre when these alterations have been carried out. . . . We recommend that the course taken in regard to the Criterion Theatre be approved, and that the Lord Chamberlain be informed, taking into consideration the small holding capacity of the theatre, the Council is of opinion that, when the proposed alterations and additions are completed, the theatre will be reasonably safe for the public."

The recommendation was agreed to.

Theatres, &c.—The following applications were agreed to on conditions: Boating Exhibition, London Exhibitions Buildings (Mr. A. O. Collard); arrangements for the New Gaiety Theatre, which it is intended to erect at the junction of the Strand with the west spur of the proposed new road from Holborn (Messrs. E. Runtz & Co.); alterations to the basement exit at the south-east angle of the St. Peter's Institute, Buckingham Palace-road (Messrs. Chambers & Son).

Fire Stations.—The following recommendations of the Fire Brigade Committee were agreed to :—

"That the estimate of 3,600*l.* submitted by the Finance Committee be approved; that an expenditure of 3,350*l.* be authorised for enlarging the Stoke Newington station; that the work be executed by the Council without the intervention of a contractor; and that the drawings, quantities, specification, and estimate be referred to the manager of works for that purpose.

That the estimate of 819*l.* submitted by the Finance Committee be approved; that an expenditure of 765*l.* be authorised for the provision of a ladder shed and additional stabling at the Fulham station; that the work be executed by the Council without the intervention of a contractor; and that the drawings, quantities, specification, and estimate be referred to the manager of works for that purpose."

Objects of Archæological Interest.—The Historical Records and Buildings Committee reported as follows :—

"Our attention having been called to the fact that objects of archæological interest frequently come to light in the course of dredging operations in the Thames, it appeared to us most desirable that such objects should be preserved to London; and we accordingly communicated with the Thames Conservancy, asking them to afford facilities to the Council for obtaining such articles with a view to their preservation. We have now to report that we have received a letter in reply from them, stating that any such objects which are discovered are preserved at the offices of the Thames Conservancy, where they may be inspected. Considering the great number of objects recovered from the Thames which have found their way into private ownership, we feel sure that the Council will be glad to know of the action of the Thames Conservancy, and we accordingly report the fact for its information."

Housing: Reid's Brewery Estate.—The Housing of the Working Classes Committee reported as follows, the recommendations being agreed to :—

"On December 10, 1901, the Council referred to us tenders for the superstructure of block C, Reid's Brewery estate. These tenders have been based on the understanding that the superstructure of blocks A and B shall also be carried out by the successful tenderer at the same schedule of prices as that for block C. The tenders received were as follows—

	Amount of Tender for Block C.
Messrs. Hobbs Bros.	£9,942
Mr. R. M. Hughes (Birmingham)...	10,012
Mr. H. L. Holloway	10,026
Messrs. Holloway Bros.....	10,090
Messrs. Martin, Wells, & Co.....	10,093
Messrs. McCormick & Sons	10,247
Mr. B. E. Nightingale.....	10,646
Messrs. Stimpson & Co.....	10,733
Messrs. E. Lawrance & Sons	10,866
Messrs. Spencer, Santo, & Co.	11,078
Mr. Samuel Redhouse.....	11,192
Messrs. Treasure & Son.....	11,198
Architect's estimate.....	10,382

The result of the tendering for the three blocks A, B, and C appears satisfactory, since the amounts of several tenders are well below the amount of the Architect's estimate. We are unable to recommend the acceptance of the lowest tender (that of Messrs. Hobbs Bros.) or of the next (that of Mr. R. M. Hughes). We think the Council will be well advised to accept the tender of Mr. H. L. Holloway. With regard to blocks D, E, and F, we have received a report from the manager of works to the effect that he is prepared to undertake the work of erecting the superstructure of block D at the amount of the architect's estimate, and also to build the superstructure of blocks E and F at the same schedule of prices. We are therefore of opinion that the work should be entrusted to the manager of works. We recommend—(*a*) That the tender of Mr. H. L. Holloway, amounting to 10,026*l.*, for the erection of the superstructure of block C, Reid's Brewery estate, and for the erection of the superstructure of blocks A and B, at the same schedule of prices, be accepted.

(*b*) That the work of erecting the superstructure of blocks D, E, and F, Reid's Brewery estate, be carried out by the Council without the intervention of a contractor, and that the working drawings, specification, bills of quantities (submitted to the Council on December 10, 1901), and architect's estimate of 10,382*l.* in respect of the superstructure of block D, be referred to the manager of works for that purpose, on the understanding that the erection of the superstructure of blocks E and F shall be undertaken at the same schedule of prices."

Improvements.—The following recommendations of the Improvements Committee were agreed to :—

"That the estimate of 1,500*l.* submitted by the Finance Committee be approved, and that subject to the Council of the Metropolitan Borough of Islington arranging with the New River Company for the necessary alterations in the position of the culvert under the footway in Essex-road, and subject to the borough council undertaking at its own cost the necessary paving and other works, the offer of the owners of the Tufnell-Canonbury Estate to give up for 1,500*l.* the land required for widening Essex-road between Cross-street and Halton Cross-street be accepted by the County Council.

That the estimate of 344*l.* submitted by the Finance Committee be approved, and that a contribution be made on the usual conditions of one-half of the net cost of widening Herbert-road and rounding the north-eastern corner of Herbert-road at its junction with Plumstead Common-road, proposed to be undertaken by the Council of the Metropolitan Borough of Woolwich, such contribution not to exceed 344*l.*

That, in connexion with the Old-street and Goswell-road improvement, the action of the Improvements Committee be approved in substituting wood paving for granite setts for the widened portion of the carriageway between the kerb and the tram line.

That, in connexion with the Tower Bridge southern approach improvement, the plot of land about 1,780 square feet in area, lying between the new approach road and Grange-road, Bermondsey, be allotted to the Council of the Metropolitan Borough of Bermondsey, with a view to the construction of underground conveniences."

The View from Richmond Hill.—A number of recommendations came up from the Parks Committee respecting the renewal of the option for the purchase of the Marble Hill Estate, as was explained by Lord Monkswell at last week's meeting of the Council.

Lord Monkswell said that with regard to the clause discussed at last week's meeting of the Council regarding boats and landing-stages, the Executive Committee did not feel it was an important one, and therefore it might be considered defunct—for this year, at any rate.

The report was agreed to.

The Council adjourned at eight o'clock for the Christmas recess, and will not meet again until January 21.

ARCHITECTURAL SOCIETIES.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The usual monthly meeting of the Sheffield Society of Architects and Surveyors was held at the Society's Rooms, Leopold-street, on the 11th inst., Mr. T. Winder in the chair. Much regret was expressed on the death of Mr. C. J. Innocent, a past President of the Society, and a vote of condolence and sympathy with his widow and family was passed. —Mr. A. Jeffery, artist in stained glass, then delivered a lecture on "Stained Glass." He commenced by giving a slight history of stained glass. The old masters taught us many lessons, and much could be learned from them. We should try and embrace all the good qualities of the old men, ignore their shortcomings, and try to improve on what has been done before us. After the sixteenth century stained glass died out, and did not again revive until the nineteenth century. Mr. Jeffery went on to explain that a window should be part of a building, a mode of letting light into a building, and should not be treated as a picture or wall decoration. If a man attempted a picture he spoiled his material as glass, and made a very bad picture. English glass was superior to foreign, both in material and workmanship. The most important point in a window was permanency, and only the most permanent of colours should be used, at whatever cost. Speaking of domestic glass, he did not think the modern style was a passing fancy, but had come to stop; but, like all other transitions in art, at the outset it seemed to have been let loose, and we seemed to be seeking after something we could not quite grasp. It would ultimately settle down and find its own level. He was eagerly looking forward to the time when there would not be so much commercialism in connexion with artistic crafts. He hoped architects in the near future would come more in contact with the craftsman, and by their joint ideas be enabled to raise the standard of work higher than it is. By so doing he thought there would be a bright prospect for stained glass in the future. The lecture was illustrated by drawings and examples of stained glass. On

the motion of Mr. C. Hadfield, seconded by Mr. J. Smith, and supported by Messrs. W. J. Hale and H. L. Paterson, a vote of thanks was accorded the lecturer.

NORTHERN ARCHITECTURAL ASSOCIATION.—A meeting of the Northern Architectural Association was held on the 11th inst., at the offices of the Association, 36, Northumberland-street, Newcastle. Mr. J. Miller Carr delivered a lecture on "Terra Cotta: constructional faience and ceramic mural decoration." The lecturer at the outset referred to the ancient history regarding terra cotta, and then to the modern use of the material. In doing so, he remarked that it was a fact that building materials have an increasing value from a decorative point of view exactly in proportion to the richness and variety of their colour. Speaking of colour in connexion with terra cotta, they must say that ten years ago they were in the full tide of uniformity in architects' specifications. A few years later a close approximate uniformity was attained with the same material, and after some eight years the feeling for true art advanced in the country by leaps and bounds. The saddest thought he had to-day about colour in terra cotta buildings was that they did not really know what value and beauty they might have if only they would let Nature have her own way. One of the principles he laid down was that the true methods of use of any material should be such as were suited to its nature and properties. A successful use of faience involved a true understanding of terra cotta as its foundation. They must consider the materials suitable for exteriors of buildings in this country. In his opinion it was a mistake, for many practical reasons, to attempt to carry out glazed treatments for the internal parts of buildings at the same time that the general structure of the exterior was proceeding. The question arose: was it not possible to depart with advantage from some of the traditional forms of treatment for interiors? He next directed their attention to the various examples of ceramic mural decoration on the screen, and pointed out the characteristics of each example.—After the lecture, the ex-President of the Association (Mr. W. Glover) was presented with an illuminated address and a silver ink-stand on his leaving the district for the South after seventeen years' membership.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

THE London County Council on Tuesday dealt with the following applications under the London Building Act, 1894. Unless otherwise stated, consent was given on conditions. The names of applicants are given between parentheses :—

Lines of Frontage and Projections.

Strand.—The retention of an iron and glass shelter at the front entrances to the Century Theatre, Strand (Messrs. E. Runtz & Co. for Mr. G. Edwardes).—Consent.

Clapham.—Wood and tile porches at the entrances, and wooden brackets to the overhanging portions of the roofs of the gables, of two semi-detached houses on the east side of Rodenhurst-road, Clapham Park (Mr. H. J. Capell for Mr. A. E. Peacock).—Consent.

Clapham.—Six houses, with one-story shops in front, on the site of Nos. 95, 97, and 99, High-street, Clapham (Mr. W. Theobalds for Mr. H. F. Harrington).—Consent.

Deptford.—Retention of a wood and glass covered way and a greenhouse at the side of No. 39, Lewisham High-road, New Cross, abutting upon Park-road (Mr. E. Crosse for Mr. H. Bisley).—Consent.

Fulham.—Deviation from the plans approved for the erection of a two-story addition on the northern side of No. 4, Filmer-road, Fulham, so far as relates to the construction of a window, with shop facia over, in substitution for two windows at the ground-floor level (Mr. A. R. Bulley for Mrs. J. Davis).—Consent.

Hackney, North.—A three-story building, with a shop on the ground floor, on the site of No. 80, Stoke Newington-road, Stoke Newington (Mr. H. W. Bannan for Mr. W. Pierson).—Consent.

Hackney, North.—A building at the rear of No. 168, Albion-road, Stoke Newington, to abut upon Broughton-road (Mr. C. F. Parsons for Mrs. E. Parsons).—Consent.

Kensington, South.—A brick and stone porch at the entrance to No. 11, St. Alban's-road, Kensington (Mr. C. E. Sayer for Mr. F. Sandars).—Consent.

Lewisham.—A one-story shop on part of the forecourt of No. 144, Rushey-green, Catford (Mr. J. Laird for Mr. F. Hardstone).—Consent.

Lewisham.—Wood and tile pents over the entrances to twelve houses on the south side of Stillness-road, Lewisham, between Crofton Park-road and Brockley-rise (Mr. J. S. R. Richardson).—Consent.

Lewisham.—The retention of a wooden oriel window at the basement-floor level in front of No. 22, Sydenham-park, Lewisham (Mrs. M. Hart).—Consent.

Lewisham.—A one-story shop on part of the forecourt of No. 64, Rushey-green, Catford (Mr. A. W. Osborn for Mr. W. Hatch).—Consent.

Strand.—Two iron and glass shelters at the entrances to an extension of the Trocadero Restaurant, Shaftesbury-avenue, St. James's (Messrs. J. Lyons & Co., Ltd.).—Consent.

Strand.—An iron and glass shelter in front of the London Pavilion Music-hall, Piccadilly-circus (Messrs. Wylson & Long for the London Pavilion, Ltd.).—Consent.

Wandsworth.†—A dwelling-house on the south side of Ormerley-road, Balham, to abut upon Laitwood-road (Mr. W. E. Johnson for Mr. G. E. Treves).—Consent.

Chelsea.—Retention of a wood and glass roof over a portion of the area of No 18, Tedworth-square, Chelsea (Messrs. H. Gibbons & Sons for Mr. M. Wadham).—Refused.

Clapham.—A two-story house on the north side of Poynder's-road, Clapham Park, at the corner of Rodenhurst-road (Messrs. R. Price & Son for Mr. S. H. Poulton).—Refused.

Fulham.—Residential flats, with projecting shop fronts, on the site of Nos. 104, 106, and 108, High-street, Fulham (Mr. C. H. Brodie for the Eagle Investment Co.).—Refused.

Greenwich.—A one-story shop in front, and a one-story workshop at the rear, of No. 43, Old Dover-road, Blackheath, at the corner of Dornberg-road (Mr. A. Roberts for Mr. G. Hall).—Refused.

Hammersmith.—Four houses, with shops, on the west side of Askew-road, Shepherd's Bush, at the corner of Gayford-road (Mr. H. Blackburn for Mr. R. Percy).—Refused.

Hampstead.—Three houses, with bay windows, on the east side of Finchley-road, and six houses, with bay windows, on the north side of Platt's-lane, Hampstead (Mr. G. W. Hart).—Refused.

Wandsworth.†—A one-story shop in front of No. 15, High-street, Putney (Mr. J. C. Radford for Mr. E. W. Taylor).—Refused.

Woolwich.†—Two houses, one on the north side and one on the south side of Tuam-road, Woolwich, to abut upon Ennis-road (Mr. J. O. Cook for Mr. H. W. Grant).—Refused.

Width of Way.

Lewisham.—The retention of the forecourt fence in front of Nos. 1, 2, and 3, Laurel-villas, at less than the prescribed distance from the centre of Laurel-grove, Acacia-road, Sydenham (Mr. T. H. Wood).—Consent.

Finsbury, East.—Warehouse buildings on the north side of Great Arthur-street, and south side of Bayer-street, Golden-lane, with the external walls of such buildings at less than the prescribed distance from the centre of Bayer-street (Messrs. N. S. Joseph, Son, & Smithem for Mr. S. H. Beddington).—Consent.

Greenwich.—No order with respect to the application of Mr. J. Hollick for consent to the erection of a stable building on the south side of Morden Wharf-road, Blackwall-lane, Greenwich.—Agreed.

Brixton.—Stable buildings on the south side of Baker-street, Brixton, at less than the prescribed distance from the centre of the street (Mr. J. J. Freeland for Mr. G. Bentley).—Refused.

Width of Way and Projections.

Bermondsey.†—Deviation from the plans sanctioned for the erection of a building, with bay windows, to be inhabited by persons of the working class, on the east side of the Tower Bridge southern approach, Bermondsey, to abut also upon Long-walk, Abbey-street, and New-road (Messrs. Humphreys-Davies & Co. for the South-Eastern Railway Company).—Agreed.

Marylebone, East.—A church, with projecting porch, buttresses, and plinth, on the west side of Glentworth-street, at the corner of Upper Park-place, St. Marylebone (Messrs. W. Bucknall and J. N. Comper for the Rev. G. F. Forbes).—Consent.

Space at Rear.

Woolwich.—No order with respect to the application of Mr. A. E Parnell, on behalf of Mr. A. Chapman, for consent to an increase in height of the back additions to No. 2, High-street, Plumstead.—Agreed.

Lewisham.—A modification of the provisions of Section 41 of the Act with regard to open spaces about buildings, so far as relates to the proposed erection of a coach-house at the rear of Nos. 1 and 2, The Parade, Sydenham-road, Sydenham (Mr. G. Tolley for Mr. F. A. Norden).—Refused.

Width of Way, Line of Frontage, and Space at Rear.

Lewisham.—A detached house on the east side of Brockley-rise, Brockley, northward of Stillness-road, with the external walls of such house at less than the prescribed distance from the centre of a public footpath to an advanced line of frontage in Brockley-rise, and with an irregular open space at the rear (Mr. J. W. Webb).—Refused.

Line of Frontage and Construction.

Bow and Bromley.—The retention of a wooden shed addition to a saw-mill and joiner's shop at Tredegar Works on the south-west side of Ordell-road, Bow, and to the retention of an iron and concrete timber-drying stage at such premises in advance of the general line of buildings in Ordell-road (Messrs. Perry & Co.).—Refused.

Formation of Streets.

Norwood.—That an order be issued to Mr. R. Pippette, sanctioning the formation or laying out of a new street for carriage traffic to lead from Auckland-hill, West Norwood, to St. Gothard's-road, and in connexion therewith the widening of Auckland-hill and St. Gothard's-road (for Mr. J. G. Pilcher). That the name St. Bernard's-road be approved for the new street.—Consent.

Wandsworth.†—That an order be issued to Mr. J. M. Jones, sanctioning the formation or laying out of a new street for carriage traffic to lead from Wimbledon Park-road, Southfields, to Replingham-road, and in connexion therewith the widening of a portion of Wimbledon Park-road and Merton-road (for the Lands Development Syndicate). That the name Pirbright-road be approved for the new street.—Consent.

Woolwich.—That an order be issued to Messrs. Farebrother, Ellis, & Co., sanctioning the formation or laying out of a new street for carriage traffic out of Woolwich-road, Woolwich, in continuation of Yately-street (for the Trustees of the Bowater estate). That the name Yately-street (in continuation) be approved for the new street.—Consent.

Lewisham.†—That an order be issued to Mr. J. W. Webb refusing to sanction the formation or laying out of streets for carriage traffic, 40 ft. wide, on part of the Crofton Park estate on the eastern side of Crofton Park-road, Brockley.—Agreed.

Wandsworth.—A deviation from the plan approved by the Metropolitan Board of Works for the formation of new streets out of Streatham-hill, Streatham, to be named Everton-road, Normanhurst-road, Roseheath-road, Daysbrook-road, and Wavertree-road (Mr. F. N. Kemp for Mrs. Wyatt-Coffee); for consent to the formation of the western portion of Normanhurst-road of a less width than 40 ft., and to the erection of houses.—Refused.

Means of Escape from Top of High Buildings.

Kensington, South.—A modification of the means of escape in case of fire, proposed to be provided in pursuance of Section 63 of the Act, on the eighth and ninth stories of a block of residential flats known as Block No. 1, Iverna-court, and situate on the west side of Wright's-lane and south side of Iverna-gardens, Kensington, for the persons dwelling or employed therein (Mr. R. Clarke for Messrs. J. Howard & Co.).—Refused.

The recommendations marked† are contrary to the views of the Local Authorities.

TRADE CATALOGUES.

THE Kern Burner Company have sent us an illustrated catalogue of their Clamond gas-heating radiators, which form a new description of gas fire, and were noticed in the *Builder* recently. It is claimed that these fires emit a greater total heat and a larger proportion of radiant heat per unit of gas consumed than any other gas fire on the market. The burner is constructed on the some principle as the Kern burner for incandescent lighting, a thorough mixing of the air admitted through the side holes in the Bunsen tube being effected with the gas before the mixture reaches the point of ignition. The effect of employing a more intimate mixture of gas and air is, no doubt, to shorten the flame but to increase its temperature, and as the flame is utilised for heating a number of perforated clay tubes, it is quite conceivable that a larger proportion of radiant heat is obtained than in the older forms of gas fire. It is improbable that the total heat obtained is greater than that yielded by some forms of condensing stoves, but radiant heat is much preferable to convected heat for heating dwelling-rooms, and we have no hesitation in recommending the Clamond radiator to the consideration of our readers.

The Simplex Steel Conduit Co., Ltd., of 20, Bucklersbury, London, have sent us supplementary pamphlets to their current price-list. This company makes a speciality of conduit wiring for the electric light, and these supplementary sheets give particulars of some important additions and improvements to their system. We note that they now supply enamelled screwed steel piping with the longitudinal seam unbrazed, at a price nearly 40 per cent. cheaper than the same material with the seam brazed. It was formerly found impracticable to screw unbrazed conduit, but by a novel die which they have invented this

can now be done simply and effectively. These conduits would be suitable for wiring for the electric light in breweries, engine-rooms, &c., as they would be able to withstand rough usage and can easily be made watertight.

Mr. Samuel Cabot (Boston, U.S.A.) sends us some specimens of his numerous creosote stains for wooden shingle, used more largely in America than in this country, as a covering to house walls. It is claimed that these stains wear as well as the best paints, and are softer and better in colour, leaving the grain of the wood showing, while they preserve the wood from decay or insects. As far as appearance goes the specimens sent to us bear out the claim made for them. He sends us also a book containing some prettily executed views of houses in chromo-lithograph, illustrating the effect of some of the colours when seen *en masse* as the colour element of a building.

We have also, by the same patentee, Cabot's sheathing and deafening "quilt," a material for the lining of walls and roofs for warmth and for deadening sound. It is a double thickness of a brown paper sewn together in sheets and containing between the two layers of paper a filling of cured eel-grass (*Zosteria marina*), with long flat fibres crossing each other at every angle, and forming a soft cushion of innumerable dead-air spaces. It is not inflammable except as to the paper, and it is stated that the material is repellent to moths and vermin. It seems a material worth attention. The B. & S. Folding Gate Co. are the agents for it in London.

Mr. Robert Adams sends us the new edition of his complete catalogue of building specialities, which includes an immense variety of articles such as fanlight openers and adjusters for various models of sash; gate and door fittings and spring hinges; reversible sashes and various contrivances for safe window-cleaning; casement and window fastenings sliding; rolled steel and bronze casements; iron window frames; gun-metal handles and door furniture of various types, &c.

Messrs. Charles Carr, of Smethwick, send us their supplementary list, containing particulars of their steam valves and steam fittings in copper and brass.

Messrs. Ewart & Son, Ltd., of 346-350, Euston-road, send us their new catalogue of geysers and other water-heating apparatus. Besides their well-known "Lightning" geyser, which is now made in seven sizes, illustrations and descriptions are given of the "Acme," "Califont," "Auto-Lightning," and other geysers. The "Califont" is, perhaps, the most important of the new types. The geyser itself may be fixed in any convenient place in the basement or elsewhere, and a single pipe is led from it with branches to the bath and other fittings at which a supply of hot water is required. The opening of any hot-water tap raises the gas in the "Califont," and a supply of hot water can (it is said) be "instantly obtained at any temperature (up to 200 deg. Fahr.) in any quantity." We presume that the water in the pipe between the geyser and the tap must be drawn off before hot water will issue from the tap. The water is delivered at the same pressure as the main service, (but not exceeding 100 lbs. per sq. in.), and taps can, therefore, be fixed above as well as below the geyser. In this and some other geysers (including the "Lightning") the products of combustion do not come in contact with the water. This is a great advantage, which is not obtained in the "Champion" and "Surprise" geysers. In the "Fuel" geyser the heat is obtained from coal or wood, and in the "Success" oil is the heating agent. Some general hints are given on geyser ventilation, and appliances are shown for reducing the risk of down-draughts, but more might with advantage have been said on this subject, as great annoyance is often caused by down-draughts in the flue-pipe leading from a geyser. In windy weather sudden gusts of air may pass down the pipe and blow the gas flames through the openings till the whole geyser is a sheet of flame. In cold, still weather there may be a steady down-draught in the pipe with the same result, but in this case the current can easily be reversed by closing the door of the bathroom and opening the window. Among the other apparatus illustrated in the catalogue are towel-warmers, urns, boilers, and copper and iron baths. The catalogue cannot fail to be of service to architects and plumbers.

Messrs. Winser & Co., Ltd., send us their new catalogue of sanitary appliances. Many of the drainage goods of this firm are already well known, and need not be described in detail. An important feature of this new catalogue is the section on "Iron Drainage," which contains illustrations of iron pipes, bends, junctions, traps, sewers, and inspection covers. The "Imperial Chambers" are well worth notice. These are really the floors of inspection chambers, each being in one piece of cast-iron. It is said that patterns for 300 different chambers are kept in stock, ranging in size from 1 ft. 6 in. by 1 ft. 6 in. to 1 ft. 6 in. by 6 ft. The main channels are 4 in., 5 in., or 6 in. wide, and as many as seven branches on each side can be provided in the largest chamber. Iron raising pieces can be supplied to take the place of brick walls. The iron is coated with Angus Smith's solution. Various kinds of manhole covers (both air-tight and perforated for ventilation) are illustrated in the catalogue, as well as grease and other gullies, flush-tanks, drain-plugs, sinks, lavatories, and water-closets. It is an interesting and useful catalogue.

From Mr. John Jones, of Chelsea, we have received an illustrated catalogue of "Improved Sanitary Goods and Specialities." The first illustration represents an intercepting chamber with pipes instead of the usual channels; all the fittings are of cast-iron, including the intercepting trap (fitted with a ventilation arm), the clearing arm and junction, and the main pipe which is fitted with a double-seal inspection cover. Cast-iron channels and junctions for junction chambers are shown, and various cast-iron traps, bends, manhole-covers, &c. Stoneware traps and channels are also shown. The sanitary fittings illustrated include baths, lavatories, sinks, urinals, and water-closets, but these do not call for special mention. The last section of the catalogue is devoted to drain-testing and drain-clearing appliances. Among the drain-testing appliances we notice two expanding screw stoppers with indicators attached for registering the amount of leakage under the hydraulic test.

The Stanhope Water Engineering Co., Ltd., of 20, Bucklersbury, London, send us a pamphlet of twelve pages containing illustrations and descriptions of the "Stanhope" water softeners, purifiers, and heaters. The water softeners and purifiers are designed for softening water in large quantities for steam boilers, laundries, town supplies, and trade processes. Softening is effected by a solution of lime or carbonate of soda, or both, according to the nature of the ingredients causing hardness in the water. The mechanism is simple and ingenious, the supply of the softening solutions being automatically regulated by the amount of water drawn from the tank containing softened water. The combined softener and heater for the feed-water of boilers is on similar lines, but means are provided for heating water by exhaust steam. The "Stanhope" softeners are already in operation at many places in the Metropolis, and will prove of great value in reducing incrustation in boilers and pipes, in saving soap in laundries, and in other ways.

"Notes on Non-Conductors of Heat" is the title of an illustrated pamphlet received from Messrs. Fred. Jones & Co., of Perrin-street, Kentish Town, the well-known manufacturers of silicate cotton or slag wool. A brief account of the process of manufacture is given, and this is followed by records of experiments showing the valuable non-conducting qualities of the material as applied to steam pipes, hot-water pipes, and refrigerating chambers.

The leaflet for December sent out by the General Electric Co. describes several very interesting inventions. The "Batten" patent rectifier is a cheap apparatus which will enable householders supplied with alternating current to obtain direct current for charging accumulators, working induction coils, &c. It consists practically of a polarised relay the tongue of which moves synchronously with the alternating current, and thus sends unidirectional current into two branched paths. By its means we can get two circuits, each carrying what is practically 6 amperes of direct current at a pressure of 25 volts. Each of these circuits would do excellently for charging the accumulators used for motor-cars and for carriage lighting. There has been a demand for an apparatus of this sort, and this is the first practical solution of the problem we have come across. The General Electric Co. are also making accumulators for use in connexion with engines, motor-cars, and launches where petrol is used for the motive power. One of these will enable an 8-h.p. motor-car to run about 1,000 miles on one charge. Another novelty the company advertises is an automatic cut-out with equivalent resistance for arc-lamps, which is very neatly designed.

Messrs. J. Sagar & Co., of Halifax, send us sheet lists of their improved tenoning machine and power mortising and boring machine. The first of these, notwithstanding its name, was designed specially for those users who have not sufficient work to justify the adoption of a machine for tenoning alone, and it is available for making tenons of different kinds, for cross-cutting, and grooving. The second machine is designed for mortising and boring either hard or soft woods, and as the boring-bit is in a line with the mortising chisel the timber can be placed under either at one setting. Both the machines are of good design, and are evidently of substantial construction.

Illustrations.

DESIGN FOR TAPESTRY HANGINGS FOR A MUSIC-ROOM.

THE design is by Miss Mabel B. Keighley, of the Plymouth School of Art, and gained for its author a gold medal in the South Kensington "national" art competition.

In explanation of the design, Miss Keighley writes that it is intended to suggest the employment of music in a marriage hymn. The panels on the left plate in our illustration would, in execution, go one on each side of the centre panel shown in the right-hand plate. The centre figures in this latter represent the bride and bridegroom; the child on the step, "Love" or "Hymen"; the musicians and the angels in the side panels, terrestrial and celestial beings joining in the hymn of praise.

The embroidery is upon hand-wove linen from the Windermere Spinning Industry, of a deep grey tone; the stitches are worked upon a frame, in Harris flax threads in reds, blues, greens, yellow, orange, black, and white, with gold and silver thread; but all subdued in tone by the grey of the background.

The whole of the design, including the embroidered specimen, has been purchased by the Board of Education.

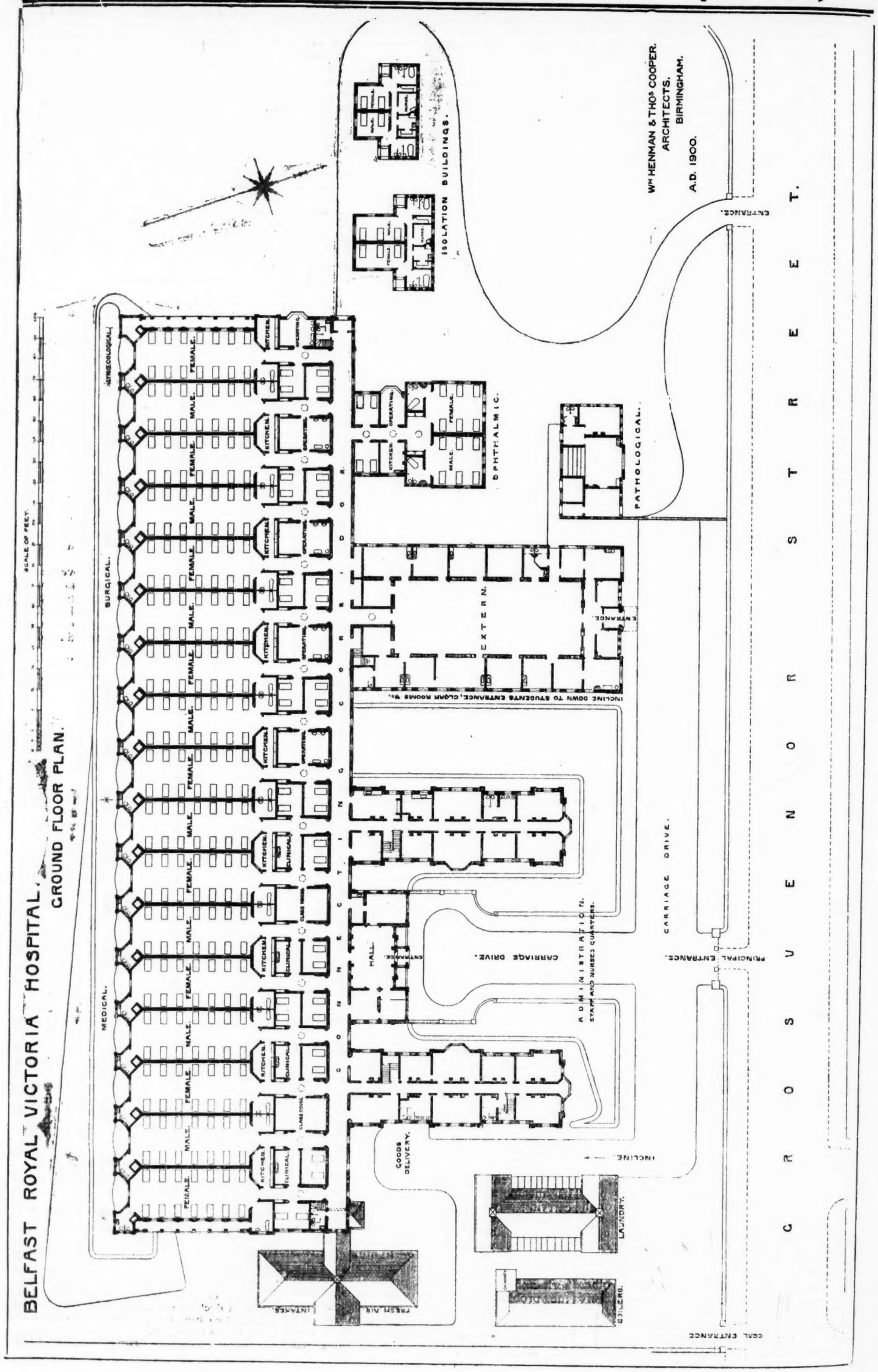
ROYAL VICTORIA HOSPITAL, BELFAST

THIS hospital, of which we give two views and a plan, is designed by Messrs. Henman & Cooper, of Birmingham, and is planned on the lines suggested by Mr. Henman in a letter in our issue of August 8, 1896, in which he advocated the treatment of hospitals and infirmaries as "health manufactories," and went on to urge the desirability of their being planned with special regard to their admitting of perfection of work accomplished with ease and despatch, against which he considered the "pavilion" system militated, necessitating, as it undoubtedly does, the traversing by the traffic of the building of long distances both vertically and horizontally, in corridors, staircases, and lifts. He then proceeded to suggest the placing of the wards, all on one story, side by side, and lighting them principally by continuous lantern lights, an arrangement rendered possible, of course, only by a development to the full of "Plenum" ventilation. In 1898 Mr. Henman was commissioned to prepare a design on those lines by the Committee of the Belfast Royal Victoria Hospital. The scheme went through various stages of development, which we need not detail, all tending, however, towards the fullest utilisation of the possibilities of Plenum ventilation; and, finally, working drawings were prepared, in conjunction with his partner, Mr. Thomas Cooper, and a tender accepted from Messrs. McLaughlin & Harvey, builders, of Belfast and Dublin, for the erection of the buildings.

The following is the architects' further description of the building:—

"The plan will show very clearly what compactness of arrangement this new departure in hospital construction admits of. We have here seventeen wards on one floor and side by side, four physicians and four surgeons having each his own pair of wards—male and female—while the seventeenth is specially reserved for gynæcological cases. Each pair of wards on the medical side has a kitchen, a doctor's room, two bathrooms, and two wards of two beds each, while each group of four wards has its classroom.

On the surgical side each pair of wards has a


BELFAST ROYAL VICTORIA HOSPITAL.
GROUND FLOOR PLAN.
SCALE OF FEET.
Wm HENMAN & THOS COOPER. ARCHITECTS. BIRMINGHAM. A.D. 1900.
ISOLATION BUILDINGS.
ENTRANCE.
QUEEN STREET.
CROSSVENOR
OPHTHALMIC.
PATHOLOGICAL.
EXTERN.
ENTRANCE.
INCLINE DOWN TO STUDENTS ENTRANCE, CLEAN ROOMS &c.
SURGICAL.
MEDICAL.
GYNECOLOGICAL.
MALE.
FEMALE.
KITCHEN.
CLINICAL.
CLASS ROOM.
HALL.
ENTRANCE.
CARRIAGE DRIVE.
ADMINISTRATION.
STAFF AND NURSES QUARTERS.
GOODS DELIVERY.
INCLINE
LAUNDRY.
OFFICERS.
FRESH AIR
INTAKES
CARRIAGE DRIVE.
PRINCIPAL ENTRANCE.
COAL ENTRANCE

kitchen, two bathrooms, and two wards of two beds each, as before, and also has a large operating-room. The gynœcological ward at the extreme western end of the group has its own operating-room, kitchen, bathroom, and two-bed ward.

Each main ward is separately approached by its own branch corridor, on either side of which are placed the above-mentioned subsidiary rooms, with stores for linen and patients' clothes.

Every main ward has its axis running north and south, and is lighted at its southern end by large windows with French casements opening into a roomy balcony looking over the hospital gardens, and flanked by the sanitary turrets attached to the wards. These main wards are all of one size, 58 ft. by 24 ft., containing fourteen beds each, and are all additionally lighted on both sides by continuous and nearly vertical lantern lights. Fresh warm air is admitted at a height of 7 ft. above the floor between each pair of beds, and the vitiated air finds exit at the floor level below every bed and is conveyed thence to the outlet ventilator in the roof of the sanitary turret. The air of the ward being constantly under slight pressure will naturally flow outwards, and therefore disconnecting lobbies to the sanitary turrets have been dispensed with.

All the accommodation we have been describing lies to the south of the principal corridor, running east and west, while north of it lie the administrative buildings, the out-patients' or extern department, and the ophthalmic block.

The administrative buildings consist of a low central block containing the entrance-hall with other rooms, and of two four-story wings housing the medical staff, the dispense department, the matron, nurses, and servants. In the basement the kitchens, porters, and stores are provided for, with rooms for noisy patients.

The extern department comprises a large waiting-hall, top-lighted like the wards, with its attendant consultation and other rooms ranged round it on all sides, and is entered at the northern end, and communicates with the main corridor at its southern end, by which communication in-patients will enter the building. Below it are rooms for students—male and female—attached to the hospital.

It may here be mentioned that in this hospital medical teaching is a feature of its administration, for which purpose the classrooms previously mentioned are provided.

The ophthalmic building receives sixteen patients in two wards of six beds each and two of two beds, and has its own operating-room, kitchen, &c.

Septic wards for six and infectious wards for four patients are arranged in two detached buildings, each with its own kitchen, nurses' room, and all necessary adjuncts, and in a third detached building are the mortuary and post-mortem theatre and pathological rooms.

The total hospital accommodation thus provides for 300 patients' beds, while the resident staff includes eight medical and surgical officers, seventy-six nurses, and thirty-two male and female attendants and servants.

In the engineering arrangements the architects have had the valuable assistance of Mr. Henry Lea, the consulting engineer, and in this department it is hoped to show a very decided advance on what has been hitherto accomplished, in the way of simplification of the appliances and a lessening of the cost of their efficient maintenance.

By the use of the exhaust steam from the engines for the heating of the hot-water supply of the building, a large deduction may reasonably be made from the cost attributable to the employment of mechanical means for ventilation.

The air-intake buildings lie at the east end of the main corridor, below which runs the great air duct of the hospital, 20 ft. by 9 ft., in sectional area at the intake end. This main air duct in its course westward gradually diminishes in height as it gives off supplies to the several branch ducts, this diminution of height following a rise in the natural level of the ground from east to west. Engines and air propellers are provided in duplicate, each of sufficient power to supply the minimum amount of air required by the whole hospital, thus allowing for all the contingencies of cleaning, rest, and repair of machinery. Without the opening of any windows a change of air seven times an hour in winter and ten times in summer, has been allowed for the whole cubic capacity of the building, exclusive of the administrative block, which, being of a residential character is provided with fireplace, heating, and ventilation in the ordinary way, supplemented by hot-water heating.

The boiler house and steam laundry buildings are at the north-east end of the site. A destructor and disinfecting apparatus are also provided.

Externally the hospital has been advisedly treated with great simplicity in red sand stock brick with dressings of Giffnock stone, the Committee having made a very strong point of concentrating the expenditure upon completeness and thorough efficiency of internal arrangement and fittings.

The total cost of the buildings will not exceed the sum of 300*l.* per bed, a particularly low figure for so completely appointed a hospital.

Associated with the work should be mentioned the names of the quantity surveyor, Mr. W. H. Stephens, of Donegall-square North, Belfast, and of Mr. G. A. Flower, clerk of the works."

THE QUEEN VICTORIA MEMORIAL: A SUGGESTION.

MR. W. H. LYNN, of Belfast, has sent us the plan here published, as a suggestion for a further development of Mr. Aston Webb's plan for the Queen Victoria memorial. The following is Mr. Lynn's description of his intention in the plan:—

"Mr. Aston Webb's bird's-eye view of his design looking towards Buckingham Palace, published with your issue of November 2, suggested the possibility of continuing the curved lines of the colonnades backward to form a circular enclosure to the Memorial site, and of connecting them with the Palace, to associate the latter more distinctly with the general design. I send you the outcome of a rough trial plan aiming at this.

In points of detail Mr. Webb's design was followed as far as possible; but in the effort to include the whole within the limits of his plan, some variations were unavoidable; for instance, the setting back of the front colonnade from the surrounding road line—the sufficient space this would leave for ornamental treatment, between the colonnades and the footway, would perhaps be no disadvantage.

The circular form of enclosure necessitated an advance of the Memorial eastward; also a change in the form of the Palace forecourt. By the former, the line of traffic passing north and south, in front of the Memorial, would be removed so much farther from the Palace. In the latter the forecourt is enclosed at the sides by the arched screens connecting the colonnades with the Palace block; and in front by the curved lines of the railing and entrance gates—the latter rather in advance of Mr. Webb's enclosure, and on good driving lines, to and from the Palace. The forecourt would thus seem to be rendered more private, while the triple archways or screens form stately entrances to the court from the side approaches.

I indicate solid backs to the colonnades forming wings to the Palace, with a view to imparting solidity of effect to them as wings, and as forming a background to the Memorial and the circular court. On the outside the walls could be relieved by engaged columns, and niches with statuary. The larger pedestals on the line of the inner circle suggest equestrian statues.

If the western half only were carried into execution, it would present a by no means incomplete appearance."

COMPETITIONS.

SCHOOLS, CHADDERTON.—In a competition for Stanley-road schools, Chadderton, the assessor, Mr. A. N. Bromley, Prudential-buildings, Nottingham, has placed first the design of Mr. Charles T. Taylor, A.R.I.B.A., Oldham. The second premiated design is by Messrs. Winder & Taylor, Oldham; the third by Mr. Richard Holt, Liverpool; and the fourth by Messrs. Cheers & Smith and J. & H. Aspinall (joint), Blackburn.

EXTENSION OF WIMBLEDON PUBLIC LIBRARY.—In the limited competition held recently for the extension of the Wimbledon Public Library, the design submitted by Mr. R. J. Thomson, A.R.I.B.A., of Hill-road, Wimbledon, has been accepted for the work, which is to cost 2,500*l.*

METROPOLITAN ASYLUMS BOARD.

THE usual meeting of this Board was held at the Boardroom, Victoria Embankment, on Saturday.

The Joyce Green Hospital.—In view of the near approach of the Christmas holidays, the Works Committee reported that they had replied to a Local Government Board communication in which that Authority stated that it would be necessary for plans and a complete estimate of the cost of certain works to be submitted for their approval. The Committee had replied that the Local Government Board were already in possession of the plans, but that a copy of the working drawings forming the basis of the contract would, when completed, be forwarded. The Board approved of the action of the Committee.

Accommodation at South Wharf.—The same Committee reported that at an extraordinary meeting of the Managers, approval was given to plans prepared by Messrs. T. W. Aldwinckle & Sons, architects, for the erection of receiving-rooms, isolation ward, and male staff quarters at South Wharf, Rotherhithe, and for the erection of a detention shelter at North Wharf, Blackwall, and directed that when the approval of the Local Government Board had been received, the plans should be referred to the Committee with instructions to take such action as might appear to them to be requisite to secure the completion of the buildings at the earliest possible date. In view of the urgency of the matter, the architects were instructed to submit to them a tender from the contractors for the permanent buildings now in course of erection at South Wharf for the erection of the proposed additional buildings. In this tender, amounting to 5,936*l.*, which was before them at their meeting, Messrs. Walter Lawrence & Son, the contractors, guaranteed to complete the buildings within eight weeks from the date of the order to commence, subject to a reduction from the contract sum of 100*l.* per week for every clear week after the period during which the said buildings should remain unfinished. The recommendation of the Committee in favour of the acceptance of the tender was adopted. Subsequently, the Committee mentioned that the Local Government Board had already approved the plans (with some minor alterations), and it being imperative, in view of the inadequacy of accommodation for patients at both the South and North Wharves, that the buildings should be erected without further delay, they (the Committee) had directed the architects to instruct the builders to proceed with the works forthwith. The Committee had also, at the request of the Ambulance Committee, authorised the provision in a temporary building at South Wharf of eight additional cubicles for the male staff.

BOOKS RECEIVED.

CENTRIFUGAL PUMPS, TURBINES, AND WATER MOTORS. By Charles H. Innes, M.A. Third edition, revised. (John Heywood.)

Correspondence.

To the Editor of THE BUILDER.

"THE DIRECT EMPLOYMENT OF LABOUR."

SIR,—To find myself suspected of advocating this system is so refreshing that I am tempted to pursue the matter a step further. It would be false modesty to disclaim the amount of insight into the practical aspect of direct employment with which Mr. Wallis would credit me—I am writing of that which I have viewed from all sides.

Mr. Chappell has not caught my argument. The savings I enumerated are such as may naturally occur to the owner who thinks of dispensing with the contractor; whether he will actually secure them depends on good management and good luck. The ordinary building owner willingly pays more money to a contractor than he may be advised that the building would cost by direct employment, because he cannot afford to run the uninsurable risks. The owner who can afford it will take his chance. I will not here go into the question of trade discounts which was touched upon in my recent paper at the Surveyors' Institution, but those who supply building materials and accessories are of the same flesh and blood as other manufacturers and merchants. Show them gold, and I have enough evidence that if one will not do business on the lowest terms that he can afford, another will. The owner whose money is ready must save the interest which the contractor has to pay while he is waiting for the owner's cheque. If he gets a bright and honest manager who is properly supervised by the architect or surveyor, he will also save the contractor's profit, or some of it. As to friction between employers and employees, let your correspondent not despond for the private owner. His class already pays in the shape of enhanced tenders for all the disputes between contractors and workmen, and they have to sit down helpless during strikes. One of my friends had such troubles as Mr. Chappell prognosticates. They might have ruined a contractor, for every job he had got would have been struck, and his establishment charges would have gone on piling up. But this man just paid everybody off and locked the gate till workmen turned up. There was no expense and but little delay.

In dealing with the question of direct employment, I would keep clear of labour questions, and if my opinion is of any value, I may say that while contractors manage their business with intelligence, they are not likely to be swept away by the rival system. If I were in want of a new house, I should invite a limited number of tenders and accept the lowest.

THOS. BLASHILL.

ANCIENT THEATRES IN CRETE.

SIR,—The article on Cretan theatres in the *Builder* of December 7 very much interested me, as, in being architect on the Knossos Excavations, I have come across some of the places mentioned by your correspondent. A few up-to-date particulars may be of interest.

Fragments of the ruined building at "Gnosso" exist to this day, and it is indicated as a probable Roman basilica on the General Survey plan of the site of Knossos, published in the Annual of the British School of Athens for 1899-1900.

Near it, lying across the present main road, are distinct traces of a Roman amphitheatre, and, more interesting still, an important Roman mosaic is known to exist quite close to the basilica. This, it is hoped, will be investigated when the Cretan Exploration Fund has money enough to completely explore the Knossos site outside the palace. Other fragments, which may be Roman, exist in the vicinity, but it is difficult to date them accurately now. In the case of the basilica, we have evidence of a definite plan on a large scale, the fragments of walls and piers being some 5 ft. above the ground in places, and composed of a rough rubble of stones and mortar, which has stood the wear of time through the excellence of the cementing material.

In turning to another site mentioned, that of Lyttos, it may be noted that modern archæologists fully bear out the reflection of De Belli's on the perplexing nature of the ground. Only one fragment of the vast aqueduct which he mentions appears to exist to-day, and is in the actual vicinity of the site of Lyttos. The note about the water having been carried from the mountains of "Sasati" is interesting, and at once suggests the outlet among caverns, which descends into the bowels of the earth at the end of the Plain of Lasithi, about 1,500 ft. above Lyttos. This plain is in the heart of the Lasithi Mountains, the third highest range in Crete, and the outlet above mentioned goes into the earth and reappears in some springs which are beside the present devious mule track, uphill from Lyttos to Lasithi. Lasithi is one of the most fascinating parts of Crete, and is described by Mr. D. G. Hogarth in the account of his exploration of the Dictæan Cave, published in the *Monthly Review* at the end of last year. The site of Lyttos, which is one of the concessions of the British, has yet to be explored.

Chersonesos (I give the modern spelling), which is mentioned in connexion with Lyttos, is also unexplored, but it does not offer many promising indications. A piece of Roman mosaic exists above ground almost on the rocks by the seashore.

But by far the most interesting Greek and Roman site in Crete is Gortyna. The disposition of the temple here is quite intact, showing a hall with the bases of a double row of columns, an atrium, and some paving leading to a statue pedestal in front. Professor Halbherr, the Italian archæologist, is at present working on the great inscription of the Laws of Gortyna, the finest archaic Greek inscription known; it is chiefly written round the inside of what must have been a circular building some 100 ft. in diameter.

The parts that have been already disclosed show beautiful Greek masonry about 6 ft. high.

D. T. FYFE,
Architect to Cretan Exploration Fund at Knossos.

SIR,—The plans of ancient theatres in Crete published in the *Builder* of the 7th inst. with letters describing the buildings as they existed in the sixteenth century, reopen more than one question that has baffled the archæologists of many generations. It will be remembered that some of these plans show what appear to be concentric rows of columns occupying the *præcinctiones*, for the purpose, it has been assumed, of supporting a roof.

The largest of these theatres, which is 435 ft. in diameter, has three such rows, and the "columns" are arranged on lines converging to the centre of the orchestra. Thus the intercolumniations are made to vary from about 40 ft. in the back row to some 20 ft. in the front; this disparity is rather against the roof theory, unless we accept a velarium, and it seems to have been determined by reasons other than constructional. As mentioned in your article, coverings or roofs were provided for music theatres for the purpose of retaining the sound; but for theatres where perfect lighting and an uninterrupted view of the stage were essential, other methods were sometimes adopted to improve the acoustic properties. In this connexion it will be remembered that Vitruvius has a chapter "On the Vases used in the Theatre," and as the probability of his account has been doubted by one of his English translators, it is satisfactory to have the evidence which is contained in the letters you have published.

According to Vitruvius, bronze vases were sometimes arranged amongst the seats, in musical order, in cavities prepared for the purpose, but so as not to touch the wall in any part, and opposite to the cells openings were left in the beds of the lower seats. We cannot tell exactly where these cavities were placed, but Vitruvius goes on to explain what should be their general arrangement; at the same time he is careful to mention that he knows of no instance of their use in Rome, but such may be seen in some of the provinces of Italy and many in the Grecian States. If the theatre is of moderate size, thirteen cavities must be ranged round at half its height and at equal distances apart; but if it is on a larger scale the height is to be divided into four parts, so that three ranges of cavities may be provided, the bottom range to have thirteen, the middle twelve, and the top thirteen. The following extracts bearing on this point are taken from the letters: "The Great Theatre of Litto is the largest ever constructed in the Kingdom of Candia. It had three ranges of copper vases contrived for the purpose of increasing the sounds, and nearly all the cells where these were placed may still be seen." Again: "The Great Theatre at Gierapetra also had an arrangement of copper vases, as may be seen by the cells which remain in an intact condition."

A reference to the plans that accompany these letters will show that the ranges of supposed "columns" agree exactly with the ranges of cells as above described, and in one instance the number of the columns is the same as that given by Vitruvius for the vases. In the other cases the discrepancy in the numbers is so slight that it may be accounted for by the carelessness that led to the omission of the *cunei* on the plans, or possibly the Vitruvian rules may not always have been strictly adhered to. It seems to be a question, then, whether we have not on these plans of Cretan theatres some evidence rather of the acoustic arrangements described by Vitruvius than of a permanent roof.

JOHN A. MARSHALL.

THE BRICKLAYING TRADE.

SIR,—My attention was arrested by the straightforward query you appended to the letter of "One from the Bench," viz.:—"Are men *compelled or* persuaded to do far less work in a day than they could do and used to do, *at the orders of and* in the interests of *the trades-unions*"?

An authoritative answer to this query as it stands cannot, I opine, be given by any individual. This seems to have been realised by your several correspondents, for I notice that, with one exception, no attempt has been made at reply. One can, however, be possessed of an opinion, and I personally have in the whole of my experience, which has been varied indeed, never heard of a bricklayer receiving such orders, and, further, I believe to the best of my belief that such orders have ever emanated from any trade union office; this the more strongly because the mere idea appears to me absurd.

If, however, we eliminate from the query the words I have taken the liberty to italicise, and substitute the word "themselves" for "the trades-unions," we have left a query to which every one actually associated with the trade can immediately answer, yes.

Thus far every shade of employer and employee are in agreement, but when we seek the cause of the reduced output, we find the former prone to put the blame on the trades-unions, whereas employees generally give entirely different reasons.

Before proceeding, perhaps I may be permitted to explain my own position:—1. I do not lay bricks nor have I any direct interest in the amount of work done. 2. I know very little about trades-unions. 3. I seldom read a newspaper, and never the *Times*, for a reason I need not here state. I have read no correspondence on this matter excepting what has appeared in your paper.

Now, Sir, "that bricklayers lay less bricks in a day than they used to do"—say, ten years ago—there can be no doubt. And that there is great difference of opinion as to the cause of this is not to be wondered at when we realise that this question is to the financier and the average employer a simple factor in a complicated sum, but it is the governing factor of the very life of the operative. In my opinion, trades-unionism has certainly played an important part in the change under consideration, not by any such silly process as ordering its members to do less work, but rather by bringing the men more closely into touch with each other, and creating a feeling of goodwill in the place of personal distrust and antagonism that at one time existed; by focussing their energies upon certain definite projects with one end in view—to better their position. And I would ask who is he that, having worked along the line during the winter of 1891 and 1892—that following the carpenters' strike—will now come forward and say that some improvement was not absolutely necessary?

At that time the treatment men received at the hands of some foremen—whose action, I presume, the employers condone—was such as good owners would scruple to apply to animals. Hundreds of bricklayers were walking about the streets of London looking for work they could not obtain. A demand—to expire in May, I believe—had been given for an increased wage, and the employers, intoxicated with their triumph over the carpenters, strained every nerve to prevent the O.B.S. preparing for the prospective struggle.

One method by which several employers sought to intimidate the men was to regularly discharge numbers of men at all hours of the day. On the job upon which I myself was working I have known men stopped at breakfast-time, noon, and evening—not by ones and twos, but by twenties—for no apparent reason whatever, unless it be the following given by an intelligent (*sic*) foreman, "Show them who they are."

Sir, can one wonder that these men, once they realised that they had the power to practically control the amount of work done, should exercise such power, and, remembering the sweetness of revenge, would they not have been more than human had they never abused it?

But enough of this that is known to all directly interested. One's time will be better employed in seeking a remedy for the evil present. Let us realise that mechanics of to-day know their power far too well to be easily intimidated or forced aside from their object by any acts of recrimination rendered practicable by the ever-varying fortune of supply and demand. Let employers of men accept the fact that salvation is to be found in better management and better organisation—not of a clique, but of their own business.

Confining my remarks to that part of the subject of management that I am acquainted with—the foremanship of bricklayers—the day of the bully is gone, and in his place is required a master workman possessing no mean degree of tact, the ability to discriminate and weed out from his gang the lazy and the incompetent, to be quick in discerning the most effective way to get from any man the maximum amount of work under prevailing conditions. Such an one will see that his men always are properly supplied with material in the most convenient form possible; that the amount of work apportioned to each man is such as to prevent any unnecessary waste of time; and, above all, he will set the example of taking pains with his work. Nothing demoralises a gang of men more than having to alter work done.

The foreman I have sketched is born, not made. Fortunately, plenty exist, if contractors and their managers had only the powers of discrimination necessary to pick them out. This is done in some cases, and the fortunate and, indeed, meritorious contractor grows rich whilst his confrères grumble their way to the bankruptcy court.

BRICKLAYER.

*** We never supposed that written orders or rules for shortening output of work were issued by trade-unions; but are there no unwritten ones? At all events, our correspondent "gives away" the working men in his admission that their "goodwill" for each other leads them to concur in mutual arrangements for doing as little as possible.—ED.

LLOYD'S-AVENUE, FENCHURCH-STREET.—On Monday last Lloyd's Register of British and Foreign Shipping removed into the new premises built for that Society at the corner of Lloyd's-avenue and Fenchurch-street, by Messrs. John Mowlem & Co. as the general contractors, after Mr. T. E. Collcutt's plans and designs—illustrated, with a plan of the ground floor, in our number of August 31 of the current year. For a block of offices on the western side of the avenue to be erected for Lloyd's-avenue Estate Co. designs have been prepared by Messrs. Davis & Emmanuel.

BIRMINGHAM SCHOOL BOARD ARCHITECTURAL WORK.—At the forthcoming meeting of the Birmingham School Board the Sites and Buildings Committee will recommend that three months' notice be given to Messrs. Martin & Martin, architects and surveyors, to terminate their engagement, all work which they have now in hand for the Board to be completed by them on the existing terms; that the Board advertise for an architect to be the architect to the Board for new works, at a rate of remuneration of 7s. 6d. per scholar of accommodation, plus 1½ per cent. for taking out and furnishing quantities, the engagement to be for three years, with a clause for determining the same at three months' notice on either side at any time; that the Board advertise for a land surveyor at a commission of ¾ per cent. on the purchase money; and that the Board advertise for a superintendent of buildings for alterations and repairs, at a salary of 250*l.* per annum, to devote all his time to the duties and to the work in the Board's offices, all necessary office furniture, stationery, &c., being provided by the Board.—*Birmingham Post.*

The Student's Column.

GAS AND GAS-FITTINGS.

24.—THE PURIFICATION AND COMBUSTION OF ACETYLENE.

THE IMPURITIES IN COMMERCIAL ACETYLENE.—Commercial calcium carbide usually contains small quantities of calcium phosphide, calcium and magnesium nitrides, and aluminium sulphide. These compounds are decomposed under the conditions which exist in acetylene generators by reaction with water, and cause the acetylene to become contaminated with certain objectionable gaseous impurities. Phosphuretted hydrogen is evolved during the decomposition of the calcium phosphide, ammonia during the decomposition of the nitrides, and sulphuretted hydrogen during the decomposition of the aluminium sulphide. In addition to these gaseous impurities, the acetylene gas as it flows from the generator also contains more or less water and finely divided lime mechanically suspended in it, and it is a matter of importance that these should be removed by passing the gas through a condensing coil before the gas is allowed to pass into the gasholder.

Liquid Drawn from the Condenser.—A considerable proportion of the water present in the acetylene as it leaves the generator may be removed by passing the gas through a condenser, and the condensed liquid which is from time to time withdrawn is found to contain a considerable quantity of other impurities. A sample of liquid drawn from the condenser of an acetylene generator has been found by Professor Lewes to contain the following substances :—

	Grams per Litre.
Lime	16·28
Sulphur	6·92
Phosphorus	4·01
Iron and Alumina	0·19
Ammonia	7·14

It is evident, therefore, that by simply passing the gas through a condensing-coil it may be purified to a certain extent, and for outdoor illumination it is not necessary to subject the acetylene to further purification, but for indoor use it should be more completely purified.

Frank's Acid Cuprous Chloride as a Purifier.—For the more complete removal of the ammonia, sulphuretted hydrogen, and phosphuretted hydrogen, many systems have been proposed, but few are of any value for domestic use. Frank's purifier, consisting of a solution of cuprous chloride in hydrochloric acid has proved one of the most successful. The siliceous porous earth known as keiselguhr may be impregnated with this solution, since it is not attacked by the acid solution, and simply acts as an absorbent. It is found that the solid material thus prepared is less objectionable to handle than the liquid. The ammonia in the gas is neutralised by the acid and is converted into ammonium chloride, the sulphuretted hydrogen is decomposed and produces a black precipitate of copper sulphide, and the phosphuretted hydrogen is partly absorbed and partly precipitated as copper phosphide.

Ulmann's Chromic Acid as a Purifier.—Another good purifying agent is the solution of chromic acid acidulated with sulphuric acid proposed by Ulmann. This liquid also removes ammonia, sulphuretted hydrogen, and phosphuretted hydrogen from the acetylene.

Bleaching Powder as a Purifier.—Bleaching powder may also be used for the removal of sulphuretted hydrogen and phosphuretted hydrogen, but the ammonia must first be removed by other means, because it may possibly react with the hypochlorite of lime to form an explosive chloride of nitrogen. The hypochlorite of lime in the bleaching powder oxidises the phosphuretted hydrogen and the sulphuretted hydrogen, and produces phosphate of lime and sulphate of lime respectively. To remove any traces of chlorine which may be carried forward from the bleaching powder, the gas after leaving a purifier containing bleaching powder should be passed through a vessel containing slaked lime. To render the bleaching powder more porous, Wolff mixes with it a small proportion of lead chromate, and the mixture then appears as a powder of a uniform yellow colour. Thorn and Hoddle employ a mixture of bleaching powder and oxide of iron.

It has been a common practice to mix sawdust with the bleaching powder to expose a larger surface of the powder to the action of the gas, but Ahrens has shown that under certain conditions reaction may take place between the sawdust and the bleaching powder and be accompanied by the evolution of heat. Sawdust should therefore be discarded in favour of keiselguhr, powdered coke, lead chromate, or other substance unaffected by the bleaching powder. Professor Lewes considers that every precaution should be used when adopting bleaching powder as a purifying agent, because many cases of spontaneous ignition and explosion have occurred when air has been admitted to bleaching powder purifiers which have been in use for some time, and because it has long been known that free chlorine may cause the explosion of a mixture of air and acetylene.

White "Haze" Produced by Combustion of Acetylene.—When acetylene has been burning for a considerable period in a room not efficiently ventilated, a white haze is sometimes apparent in the atmosphere. This haze is only formed when the acetylene has not been purified from phosphuretted hydrogen, and is due to the formation of phosphorus pentoxide, which has a remarkable affinity for water vapour, with which it forms phosphoric acid. An extremely small proportion of phosphuretted hydrogen will give rise to the white haze, and it is imperative that this impurity should be removed before the acetylene is consumed in confined spaces.

The formation of the haze may often be prevented by simply passing the gas through a condenser, then through a washer, and finally through a dehydrating material such as quicklime; but it is always safer to pass the gas through one of the purifying agents previously mentioned.

Combustion of Acetylene.—For complete combustion one volume of acetylene requires 12·5 volumes of air, whereas one volume of coal-gas requires only about 5¾ volumes of air. To enable the acetylene flame to meet with sufficient air for its complete combustion, it is necessary to supply the gas to the burner under higher pressure than that employed for coal-gas luminous flames, and to use burners having smaller orifices than those provided for coal-gas. To produce a luminous flat flame with coal-gas, a gas pressure of about ¾ in. is, as a rule, most suitable, but for acetylene the best results are usually attained when the gas issues from the burner under a pressure of about 3 in.

Bray Burners for Acetylene.—Bray burners for acetylene resemble Bray coal-gas burners in outward appearance, but have extremely small orifices. They give a good result for a time, but gradually become choked with a carbonaceous deposit. They can, however, be bought retail for 2d. each, and many acetylene consumers employ these burners, and discard them when they begin to yield a smoky flame, in preference to buying more costly burners which remain serviceable for a longer period.

The "Naphey" Burner.—The tendency of acetylene to burn with a smoky flame and to leave a carbonaceous deposit in the burner orifices greatly detracted from the practical utility of the gas when it was first adopted for domestic lighting. To overcome this trouble Bullier and others devised burners having air passages formed in the burner tip. A burner of this type is that known as the "Naphey" burner. It consists of a metal tube having two arms, which near their extremities are bent towards one another at right angles. The end of each arm is fitted with a steatite or lava tip having side holes for the admission of air, and a central passage for the exit of both gas and air. When the jets issuing from the two burner tips are ignited, the two flames impinge upon one another and produce a flat flame. Owing to the provision of the air holes, the flames do not quite touch the tips of the burner but burn just above them, and consequently the burner tips are not so speedily blocked with carbon as those of the Bray union-jet type. In these burners the air does not mix with the gas in sufficient volume to materially reduce its illuminating power, but merely forms an envelope around the issuing gas and protects it from contact with the heated burner tips.

The "Shaffer" Burner.—When the Naphey burner had been in use for some time it was found that the metal arms sometimes became warped, with the result that the two jets were displaced from their proper relative positions, and the flame became distorted and had a tendency to smoke. This trouble was, however, soon overcome by constructing the arms of the same rigid material as the burner's tips.

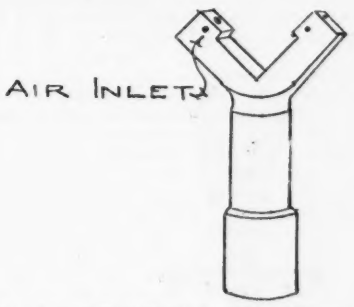


Fig. 61.—"Shaffer" Acetylene Burner.

Shaffer's burner (fig. 61) is a good example of burners of this type.

A host of burners of both the Naphey and the Shaffer type are on the market, but it does not come within the scope of the present series of articles to attempt to discriminate between them, or to discuss the various claims for priority of discovery.

The "Phôs" Burner.—A number of burners fitted with mechanical devices for removing the carbon deposits as soon as they are formed have been patented, but the only one which calls for mention is the "Phôs" burner (fig. 62). The construction of the burner will

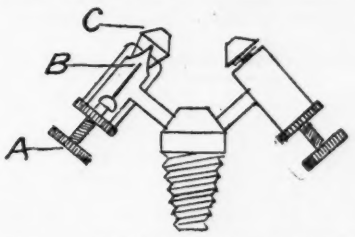


Fig. 62.—"Phôs" Acetylene Burner.

readily be understood by reference to the illustration. The deposit is removed by screwing up the button (A), which pushes the wire (B) through the burner tip (C). The arms of the burner are made of soft metal, which can be twisted into their proper position with the fingers if they become warped and cause distortion of the flame.

Importance of Uniform Pressure.—The gas pressure most suitable for the combustion of acetylene varies with different types of burner, but a pressure equal to about 3 in. of water is the pressure required for many of the burners in use at the present time. It should be remembered that every burner requires to be supplied with gas under a certain definite pressure, and that any departure from that point, whatever it may be, must result in a reduction in the illuminating efficiency obtained from the acetylene.

Incandescent Mantles with Acetylene.—From time to time acetylene burners of the Bunsen type have been constructed with the intention of using them in conjunction with incandescent mantles, but although a higher lighting efficiency may be obtained from the mantles with acetylene than with coal-gas, the former gas is at present too costly and too difficult to use in atmospheric burners to be suitable for incandescent lighting.

Cooking and Heating Appliances.—Acetylene can be used with specially constructed burners for cooking and heating purposes in the same manner as coal-gas, but it is more costly, and it is more difficult to construct satisfactory atmospheric burners for acetylene than for coal-gas, owing to the larger proportion of carbon contained in the acetylene and its wider range of explosibility. Acetylene has, however, been successfully adapted to ring burners for the boiling of water, and the troubles attendant upon its use as a heating agent for other appliances will no doubt be overcome after further experience. Luminous flames can be employed for heating and cooking in the same manner as luminous coal-gas flames, but have a greater tendency to emit free carbon.

25.—PIPES AND FITTINGS FOR ACETYLENE INSTALLATIONS—SOME PORTABLE ACETYLENE APPLIANCES.

PIPES AND FITTINGS.—All buildings in which acetylene is used should be quite free from any odour of the gas, and where an odour is present it is due to the

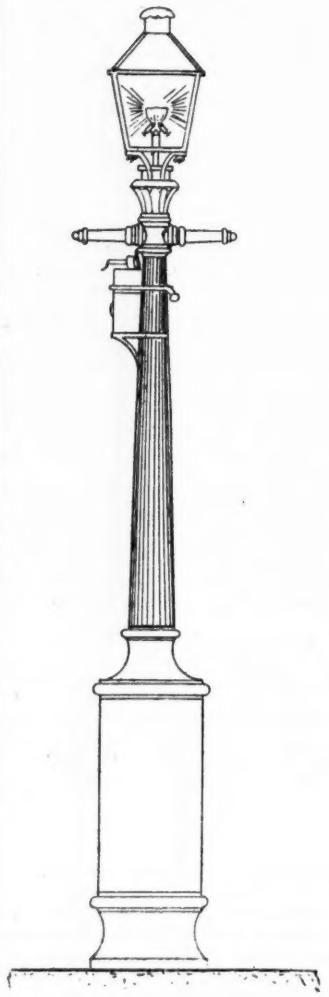


Fig. 63.—Generator Affixed Externally to Lamp Column.

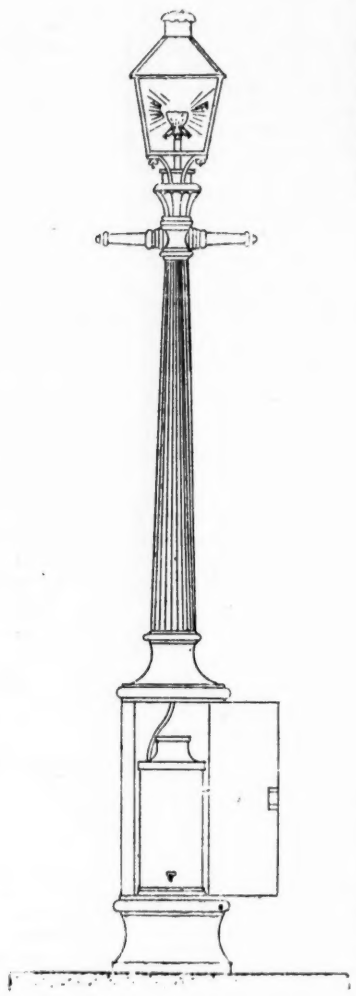


Fig. 64.—Generator Located in Chamber at Base of Lamp Column.

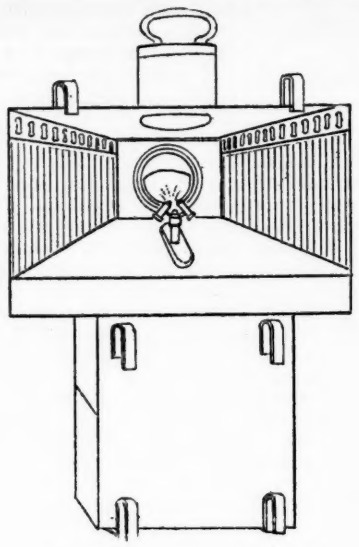


Fig. 65.—Acetylene Lamp for Cars or Omnibuses.

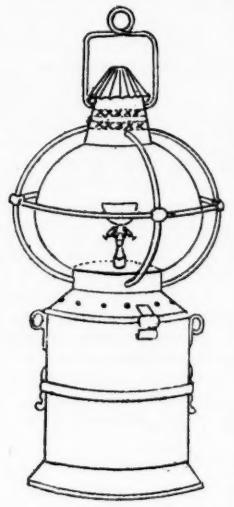


Fig. 67.—Acetylene Lamp for General Use.

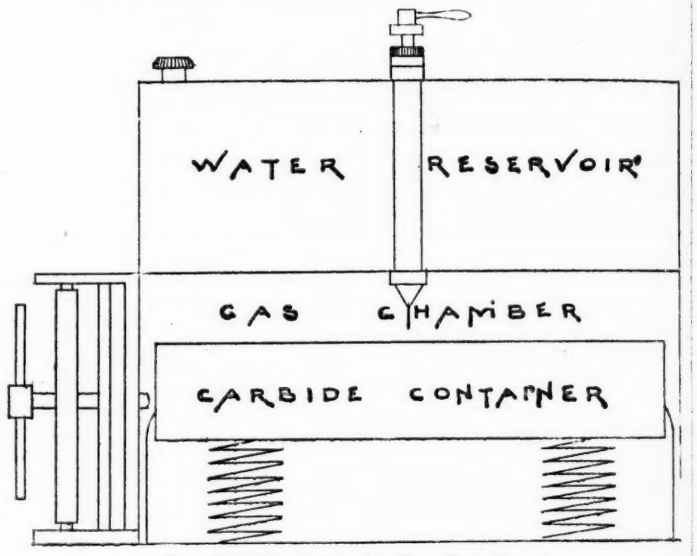


Fig. 66.—Generator for Omnibus Lamp.

use of defective pipes or fittings. No compo pipe should be employed, but all pipes should be iron barrel of the best quality, and should be connected together without the use of packing or paint. White lead mixed with oil, and other substances of a like nature commonly employed when connecting pipes for coal-gas distribution, should not be used, because they are attacked by the acetylene, and their cementing power is soon destroyed. The threads may be dusted with finely-ground plumbago, but the pipes should be sufficiently well made and threaded to enable gas-tight joints to be made without the aid of any cementing material. The brackets and pendants should be constructed of stout metal, preferably iron. Fittings of the best quality which have been used for coal-gas may be employed for acetylene if they are thoroughly overhauled and refitted by a competent fitter but cheap brass fittings of brazed tube must be rejected. When the work of connecting all the parts of an installation has been completed, the installation should be tested until found to be perfectly air-tight or gas-tight under a pressure of 20 in. of water. Before attempting to ignite the gas at any of the burners, the gasholder should be filled with acetylene, and a rubber tube should be attached to the gas-bracket or pendant most distant from the gasholder. The free end of the rubber tube should then be passed through a window into the open air, and acetylene from the holder should be allowed to pass through it until all the air in the pipes and fittings has been replaced by acetylene. The freedom of the acetylene issuing from the mouth of the rubber tube from contamination with air may be ascertained by passing the gas into an inverted test-tube. If the test-tube, after being filled with gas, is removed from the neighbourhood of the rubber tube, and the gas within it is ignited, it will burn quietly if free from air, but will ignite with a sharp explosion if air be present in dangerous quantity.

Acetylene should not be stored in the gasholder for more than forty-eight hours before it is required for consumption, because, owing to the fact that the gas is soluble in water, and that water saturated with acetylene and in contact with the atmosphere slowly yields up its acetylene to the atmosphere, an appreciable loss in volume occurs. This loss increases with the pressure under which it is stored, but the gas must nevertheless always be stored under slight pressure, because it is better to lose a certain proportion of the gas than to run that risk of permitting any air to enter the holder, which would exist if the gas were stored under a slight vacuum. The acetylene should by preference be generated and stored in the gasholder only a few hours before it is required for combustion.

Portable Appliances.—The high illuminating power of the acetylene flame, even when the gas is being consumed at the rate of only ½ cubic foot per hour, renders this illuminant very valuable for all kinds of portable lamps. For the temporary lighting of building and engineering works, for searchlights and signalling, for carriage and hand-lamps, for the lighting of camps, and for isolated lamps in village streets or public or private grounds, acetylene is admirably adapted. For portable lamps automatic generators have always to be used, and the carbide has usually to be broken into pieces of very small dimensions. The yield of available gas per pound of carbide consumed is not, therefore, so large as that obtained with stationary non-automatic generators. Portable acetylene generators can be constructed to meet almost every conceivable requirement, and the ease and safety with which carbide can be transported, and acetylene generated by simple contact of the carbide with water, renders acetylene much preferable to oil as an illuminant for outdoor use. A number of acetylene table-lamps for indoor use have also been devised, but none are altogether satisfactory, and the garlic-like odour of impure acetylene is generally more or less noticeable in rooms in which they are employed. Even if they do not emit an odour when in use, the operation of cleaning and recharging the generator cannot be performed without creating a nuisance. The cleaning may, of course, be performed in the open air outside the house, but only an acetylene enthusiast will use a lamp requiring such treatment throughout the cold winter months.

Street Lamps.—Street lamps may be lighted with acetylene generated at a central station and conveyed through small gas mains to the lamps in the same manner as coal-gas; but where isolated lamps in villages or carriage drives have to be provided, a small portable generator may be attached to the upper part of the lamp column as shown in fig. 63, or may be located in a lock-up chamber in the base of the column as shown in fig. 64.

Lamps for Cars or Omnibuses.—A large number of cars and omnibuses are now lighted by acetylene, the "Phôs" Company alone having undertaken to fit 2,000 of the London omnibuses with acetylene lamps in place of the oil lamps formerly employed by January 1 next. One of the "Phôs" lamps used for this purpose is shown in perspective in fig. 65, and the lower portion of the lamp in which the acetylene is generated is shown in section in fig. 66. The lamp is fixed on the right hand front of the car, and shows a light ahead at the same time that a comparatively brilliant light is thrown into the car. The carbide container is situated in the lower part of the lamp. The lid of the container is of wire gauze or perforated metal, and the base consists of a metal plate which is pressed upwards by a spring. The object of the spring is to press the upper layer of carbide against the perforated lid, and to thus ensure uniform and continuous decomposition. The water reservoir is situated above the carbide container, and is fitted with an adjustable

valve from which water drips upon the perforated lid of the carbide container and comes in contact with the carbide.

All the different forms of "Phôs" lamps are constructed upon this principle, although slight modifications in constructive details are made to render each lamp suitable for the particular purpose for which it is intended.

Lamps for Building Works.—Hand lamps consisting of lanterns connected to portable acetylene generators are made in all sizes and designs. A form of lamp suitable for use on building and engineering works is shown in fig. 67.

Cycle Lamps.—Patents have been obtained for a great number of acetylene cycle lamps, many of which closely resemble one another in all essential details; but few, if any, of the lamps are altogether satisfactory. In some the carbide has to be used in the form of cartridges, and it is often difficult to obtain these at the moment when they are required. In others the water is admitted to the carbide through a porous medium such as felt or cotton wick, and this soon becomes choked with lime. Others are provided with a carbide container of insufficient capacity, and the lamp goes out before the evening's journey is completed. Many of the lamps cannot be used without the generation of an offensive odour, and in many the gas continues to be generated for a long period after the lamp has been extinguished. In spite, however, of all these disadvantages, and of the fact that acetylene is more costly than oil, acetylene cycle lamps remain very popular, and are in demand in every part of the country.

Signal and Searchlights.—The brilliancy and penetrating power of the acetylene flame, and the ease and freedom from danger with which calcium carbide, as compared with oil, may be transported, renders it extremely valuable for military purposes, and it may also be used with advantage as a searchlight when the more powerful electric arc light is not available. It has been proposed that acetylene searchlights should be used by fire brigades to enable the men to see more clearly through the steam and smoke in which the burning structure is frequently enveloped, and generators mounted on wheels, like those often used by contractors, have already been constructed for this purpose. The acetylene signal and searchlights constructed by different firms of generator makers are usually supplied with acetylene from flexible pipes connected to small generators which work upon the same principle as those provided for domestic lighting. A projector to be used with acetylene for searchlight purposes, which is supplied by the "Bon-Accord" Company, and which is intended especially for use on ships, but is adapted for use in other situations, is shown in fig. 68.

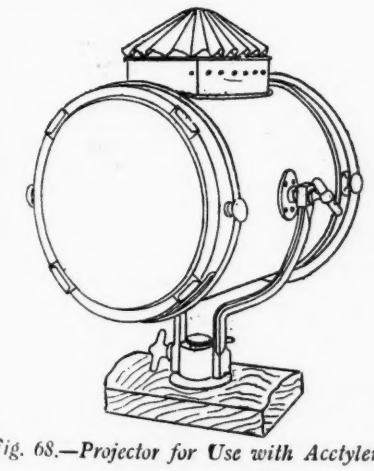


Fig. 68.—Projector for Use with Acetylene.

UNITARIAN CHAPEL, MERTHYR.—The foundation-stones of the new Unitarian chapel now in course of erection in Thomas-street, Merthyr, were laid recently. The new sanctuary, which is of late Gothic design and is to be constructed of brick with Bath stone dressings, provides accommodation for about 150 worshippers, and there is a school-room underneath, the total cost of the building, including the site, being about 2,000*l.* The architect is Mr. E. A. Johnson. The contract for the erection was first taken by Mr. John Jones, Glanynant, and upon his death it was transferred to Mr. Edward Lumley, who is at present carrying it out.

ROOD SCREEN, ST. PAUL'S, KNIGHTSBRIDGE.—The rood screen at St. Paul's, Knightsbridge, which was erected years ago from the design of Mr. G. F. Bodley, is to be decorated with a series of painted panels by Mr. N. H. J. Westlake.

GENERAL BUILDING NEWS.

ST. ANDREW'S-STREET BAPTIST CHURCH, CAMBRIDGE.—The design of Messrs. George Baines and R. Palmer Baines has been accepted for this new church, &c. The building is to be faced with whole white flints, the dressings, tracery, &c., being of red Mansfield stone. A square tower forms a feature of the design. The joinery is to be of oak. The seating accommodation is for about 950 persons, and the estimated cost is 6,200*l.*

YATTON CHURCH TOWER.—The tower of Yatton Church, one of the landmarks of Somerset, was rededicated by the Lord Bishop of Bath and Wells recently. Some time ago the tower and some of the parapets were found to be in an unsafe state, and parishioners were divided on the question of repair or rebuilding, those in favour of the former doing all in their power to secure the retention of the old work, with which were bound up so many old associations. Various meetings were held and expert advice taken, Mr. Detmar Blow, on behalf of the Society of Antiquaries, reporting that the tower could be repaired and made as efficient as if rebuilt. Mr. Edmund Buckle (diocesan architect), on the other hand, reported strongly in favour of rebuilding, and this latter course was at length adopted, and the work has been carried out by Messrs. Merrick & Son, of Glastonbury, who have preserved as much of the original stone as possible, and the tower again stands cut in its stunted form.—*Western Press.*

BAPTIST CHURCH, WYCOMBE.—A site for a new Baptist church has been secured at the junction of Oakridge and Jubilee-roads. At present effort is concentrated on the first part of the project—the erection of schools and classrooms, to accommodate about 250 persons. The design is by Mr. T. Thurlow, architect, High Wycombe.

CONGREGATIONAL CHURCH, SOUTH CLIFF, LOWESTOFT.—The tender submitted by Mr. John Ashby, Lowestoft, has been accepted for this church, and building operations have been commenced. The contract amounts to 1,698*l.* (architects' estimate amounted to 2,000*l.*). The architects are Messrs. George Baines & R. Palmer Baines, Clement's Inn, Strand, W.C.

FIRE BRIGADE STATION, CARDIFF.—Plans for the new fire station, with living quarters for thirteen officers and firemen with families, and for eleven single members of the brigade, were submitted on the 11th inst. to the Cardiff Watch Committee by Mr. Harpur, Borough Engineer. The buildings are to be erected at the corner of Quay-street and Westgate-street. The cost is estimated at 15,200*l.* The plans were adopted.

RECONSTRUCTION OF THE THEATRE ROYAL, NEWCASTLE-ON-TYNE.—It is announced that the reconstructed Theatre Royal will be opened on Boxing-night. The old theatre was shut, as it were, between shops. The area of the new building has been considerably enlarged, several shops, both in Market-street and Shakespeare-street, being taken for the purpose. The portico, which has dominated Grey-street for over sixty years, has not been interfered with. Beneath this, as before, is the main entrance to the theatre, and from the street inwards great improvements have been made. A stone screen has been built up there, in strong relief against the darker background. The screen is surmounted by two sculptured figures. Here are the entrances to the dress circle and the upper circle, and the emergency exits from the pit and gallery. The vestibule is spacious; it is approached by a lobby, whose walls are lined with rose marble. The entrance-hall has Pavanazza marble pilasters and columns, and there is a marble staircase leading from the hall to the dress circle. There is a polished mahogany dado on the walls of the hall and staircase, the frieze and the ceiling being decorated in fibrous plaster. A retiring saloon is provided, the floor being paved with white marble. The pit and gallery entrances are in Shakespeare-street. Here, too, are the exits from the upper circle and the stalls, as well as the stage-doors and the entrances to the dressing-rooms. All the exit doors are fitted with patent panic bolts, and open outwards. The ways to the different parts of the house are so arranged, the descents particularly, as to prevent the possibility of a crowd accumulating at any given spot. The dressing-rooms are ventilated on the plenum system. Each room is fitted with hot and cold water. The house is divided, as it was before, into pit and stalls, dress circle and upper circle, boxes, amphitheatre, and gallery. All these are built of fireproof material, the floors being concrete, and there is not an upright pillar to be seen anywhere, all the overhanging parts being carried on cantilever girders. The proscenium front is of alabaster and fibrous plaster. The stage is divided from the front of the house by a fireproof curtain. The auditorium will seat 2,500 people. The theatre will be lighted by electricity, and there is an installation of four thousand lights, operated from a switchboard on the stage. The architect of the new building is Mr. Frank Matcham, of London, and the general contractors have been Messrs. J. Parkinson & Sons, Blackpool, Lancashire. The clerk of works has been Mr. C. Greenman. Messrs. Vaughan & Dymond, of Newcastle, have supplied the ironwork; the marble work has been provided by Messrs. J. Tweddle & Co., Newcastle; the system of ventilation has been put in by Messrs. Stott & Co., Oldham; the ornamental work in front of the circles and boxes has been supplied by Messrs. De Jong, London; and the electric installation has been put in by the Alliance Electrical Company, Manchester. The hydrants have been provided by Messrs. Oldroyd & Co., Leeds, and the stage portions of the work by Mr. J. N. Lyons, London, represented by Mr. Mather.

LEEDS SCHOOL OF ART.—Sir James Kitson, M.P., laid the foundation stone of the new school of art in Leeds on the 11th inst. The building will accommodate twice as many pupils as the old school, which, as a Government school of design, was established in 1846. Last year six silver medals and seven bronze medals were won by the students, and the number of successes in design was such as to place the school third in the provinces. The number of individual students was 575. Last year the committee decided to invite competitive designs for a new building, the cost not to exceed 10,000*l.* The design by Messrs. Bedford and Kitson, of Leeds, was selected, on the recommendation of the adjudicator, Mr. W. H. Bidlake, M.A., of Birmingham. The new building will have frontages in Vernon-street, Percival-street, and Cookridge-street. In character the building will be quite plain, but on the west elevation, facing Cookridge-street, provision will be made for a panel, which will be filled in by the students in glass mosaic. In the basement provision will be made for classes in the applied arts, including plaster work, repoussé, enamel, marble and stone carving, wood carving and cabinet work, pottery, painting and decorating, lithography, and bookbinding. On the ground floor there will be a light and shade class-room, a model and freehand class-room, and a lecture-room capable of seating 100 students. The first floor will afford accommodation for a painting class-room, an architectural class-room, a design-room and library, and an elementary modelling-room. On the second floor there will be the life room, antique room, life modelling-room, master's room, and a conservatory for plants to be used in the school.

FIRE STATION, LONDON.—Mr. J. D. Gilbert, Chairman of the Fire Brigade Committee of the London County Council, laid the foundation-stone of the new fire station in Euston-road on the 14th inst. The land cost 7,700*l.*, and the contract for building was 14,377*l.* The builders are Messrs. Simpson & Co., and the architect was Mr. W. E. Riley, of the London County Council. The station will be in Portland stone and red brick. There is ample provision for the third officers' quarters, quarters for station officer, seven married men, coachman, and single men, with large recreation-room. Stabling will be erected for six horses, and the engine-room will be 39 ft. by 33 ft., with space for a horsed escape, steam-engine, and hose-cart.

LEEDS TOWN HALL ALTERATIONS: PROPOSED NEW ASSIZE ACCOMMODATION.—At a meeting of the City Buildings Sub-committee on the 16th inst., Mr. Jonathan Peate, the chairman, recommended, as the result of a conference with the City Engineer, the provision of entirely new rooms leading off the corridor of the Town Hall, on which the Grand Jury room opens. The suggestion is to knock down a portion of the blank wall and to roof over the leaded flat as was done when tearooms were added to the Lord Mayor's suite of apartments on the other side of the building. Another point considered was the contemplated rearrangement of the Chief Constable's and the Town Hall Superintendent's offices.

ALTERATIONS TO WOLVERHAMPON TOWN HALL.—The General Purposes Committee of the Wolverhampton Town Council have issued a report with regard to the proposed alterations and additions to the Town Hall buildings. Seven tenders were received, and the Council is recommended to accept that of Messrs. H. Willcock & Co., of Wolverhampton, amounting to 14,550*l.*, and request them to tender for the panelling of the council-chamber and the Mayor's reception-room, and the erection of a gallery in the council-chamber. It is also recommended that the Public Works Committee be asked to make proper arrangements for the sittings of the Council in the Sessions Court, for the removal of the pictures in the Council-chamber, and also to make other provision for the carrying on of the business of the Corporation while the alterations to the Town Hall are in progress, and that tenders be invited for the necessary furniture for the Council-chamber and the new and altered offices, and that the special committee, who have charge of the extensions to the Town Hall, be authorised to accept such tender as they may think proper.

NOTTS SANATORIUM FOR CONSUMPTIVES, NEAR MANSFIELD.—The construction of the Nottingham and Notts Sanatorium for Consumptives upon the site on Ratcher Hill, near Mansfield, is rapidly approaching completion. The frontage of the sanatorium faces south-south-east, towards Blidworth. The general plan of the building is a small central block, with wings east and west of it, the over-all measurement being 174 ft. by 69 ft. The building is constructed throughout of wood, with brick foundations and corrugated iron roof, and is designed to accommodate about twenty patients, though provision will only be made at the outset for fourteen, together with a matron, one nurse, and two or three servants. In the central part of the building are located the apartments of the matron, nursing and domestic staff, the private wards, isolation ward,

bathrooms, and lavatories. The kitchens and other domestic offices are also placed between the wings. The walls of all the rooms in this part of the sanatorium are of Carolina pine match-boarding of double thickness, with layers of felt and air-space between. In the wards compo-boarding has been used for the walls with a view to securing a smooth, washable surface. The two main wards are each 40 ft. by 22 ft., and measure 11 ft. 6 in. from floor to ceiling, providing accommodation, respectively, for six or seven patients of either sex. The sanatorium is lighted throughout by means of electricity, generated in a small electric lighting station on the north side of the building. With the exception of the matron's and nurses' sitting-rooms, the sanatorium is heated throughout by low-pressure hot-water radiators, the boiler-room being in the basement of the central building, and the roofs are fitted with Boyle's air-pump ventilators, surmounted with ornamental turrets. A feature of the sanatorium is the series of verandahs. These run the whole length of the wings on both the north and south sides, the dimensions of each being 67 ft. by 9 ft. They are roofed with glass, but are open at the front and ends, save for a boarded palisading about 3 ft. high. The accommodation of the sanatorium can be increased to a capacity for twenty-six patients by utilising a large attic in the central building, with very slight structural alteration, as a ward. The buildings have been constructed in accordance with designs provided by the Portable Buildings Co., of Manchester and Fleetwood, under the direction of their representative, Mr. Robinson, the superintending architect being Mr. Robert Evans, jun., of Nottingham. The contract for the construction of the foundation, brickwork, and roadmaking has been carried out by Mr. C. Vallance, of Mansfield; the heating apparatus, baths, and ironmongery have been fitted by Messrs. T. Danks & Co., Nottingham; the electric light fittings and generating plant have been put in by Mr. W. J. Furse, Nottingham.—*Nottingham Guardian.*

NEW BUILDINGS, ST. PETER'S HOSPITAL, BRISTOL.—A new boardroom has been opened at St. Peter's Hospital, for the use of the guardians of the Bristol Union. In the course of last year it was decided to erect new buildings at the west end portion of St. Peter's, without interfering with the ancient frontage of the hospital. The architect, Mr. W. S. Skinner, was directed to make no alterations involving the destruction of any part of the building of any antiquarian or architectural interest, and when his plans were submitted it was seen that the retention of the front elevation was secured, and also the existing courtroom and all the rest of the interior which was of any antiquarian interest. At the same time the plans showed a new boardroom of suitable dimensions, and other much-needed accommodation for the guardians, for the staff, and for the poor applying for relief. The nature of this new accommodation on the three floors is as follows:—First floor (same level as existing board-room and clerk's offices), board-room, 40 ft. by 30 ft., with entrance lobby, 23 ft. 6 in. by 8 ft., and long corridor down side; guardians' private room, chairman's room, ladies' cloak-room, gentlemen's cloak-room (and inner room and lavatories also). Ground floor (entrance level), two offices, and one large office, 29 ft. by 21 ft. 6 in. (about to be divided into three). Basement (yard level), large waiting-hall or pay-station, 46 ft. 6 in. by 21 ft. 6 in., with two offices for relieving officers, and lavatories and stairs to ground floor. The new board room is lined throughout to a height of 15 ft. in Austrian oak, designed in the Jacobean style, but of a somewhat later date than the woodwork of the old board room. The frieze and pilasters are carved, and no two panels of the former are of the same design. The ceiling is coved, ribbed, panelled, and enriched in plaster, and has a central lantern light. Electric light is given from six electroliers, each of five lights. The seating accommodation is for sixty-four persons, in addition to which there are five seats on the dais for the chairman, vice-chairman, clerk, &c. Messrs. Stephens, Bastow, & Co., Ltd., of Bristol, were the builders. The cost of the work has been about 7,000*l.*

DUNDEE BUILDING TRADE.—The state of the building trade in Dundee at the present time is not particularly bright, and those in a position to know give as the cause that the city is overbuilt, and that material is still at too high a figure. The valuation roll shows at present something like 2,000 empty houses. During recent months building work has consisted almost entirely of tenements and small buildings, and, with the exception of the prospect of district libraries, there is no contract of importance in view. Builders are looking to the tramway extensions developing feuing. Already, by the opening up of the outlying districts of the city, many small cottages and villas have been built, notably in the Maryfield district, and now that the cars penetrate to Balgay on the one hand and Ferry-road on the other, additional dwellings may be expected to spring up. The laying down of tramways gives rise also to the probability of new streets being formed, and if these should happily result, the building and allied trades may take a turn for the better.—*Dundee Advertiser.*

FOREIGN.

FRANCE.—A monment to Mgr. d'Hulst has been inaugurated in the chapel of the Catholic church in Rue Vaugirard. The bust is by Chaplain, and is placed in a niche decorated with a framework of mosaic designed by M. Daumet.——The ultimate use of the Petit Palais on the Champs Elysées seems still undecided, in spite of the resolution which had consigned it to the Municipality of Paris as an Art-Museum, but which has not been formally ratified. Meantime the work for the efficient warming of the building is being carried on, at the respectable cost of 108,000 francs; and a great deal more is to be spent on interior decoration. —— M. Ferrary, sculptor, has been appointed professor of modelling at the Ecole des Beaux-Arts, in place of the late M. Massoule.——A committee has been formed to erect in the Parc Monceau a monument to Pailleron, the brilliant author "Le Monde où l'on s'ennuie."——A splendid tapestry executed at the Gobelins, after the "Danse des Nymphes" of Coypel, is to be placed as a decoration in the large Conseil of State gallery at the Palais Royal.——M. Paul Dubois has just completed a fine equestrian statue of the Republican general Marceau. —— It is proposed to close the quadrant galleries of the Trocadéro at Paris, in order to enlarge the sculpture gallery, which has become insufficient for its requirements.——The Victor Hugo monument, by M. Barrias, is to be unveiled in the Place Victor Hugo on February 26, the anniversary of the poet's birth.——The painter Weerts has just completed a large picture, 20 mètres long by 5 in height, for the gallery of the Cour d'honneur of the Sorbonne. It represents a Fair at St. Denis in the XVth century.——The engineer of the Department of l'Ain has been commissioned to construct a bridge over the Saône at Feans, at a cost of 300,000 francs. ——On Friday last the Chamber of Deputies passed, without discussion, the new law which gives to architects and to decorative sculptors a copyright in their works on the same basis as artistic and literary copyright generally.——The Municipal Council of Paris has decided that the Ecole Speciale de l'Architecture, the present building of which is to be soon demolished, is to be rebuilt on the line of the Boulevard Raspail, on a site near the Mont-Parnasse cemetery.——The Conseil-Général of the Seine has voted for the reconstruction of the two suspension bridges of the Ile Saint-Denis, at a cost of about 2,000,000 fr.——There is to be an International exhibition of arts and industries at Lille next year, from May to September. It will be installed on the space at Lille called the Champ de Mars, and is to be on a large scale, occupying an area of 150,000 square mètres.—M. Albert Besnard has been appointed president of the "Objets d'Art" section of the new Salon, in place of the late M. Cazin.——Important artistic work is shortly to be carried out in the Department of the Seine, for the decoration of the Hôtel-de-ville of Ivry-sur-Seine and that of Neuilly; and also for the decoration of the Mairies of Choisy-le-Roi, Clichy, and Thiais.

MISCELLANEOUS.

THE CHRISTMAS HOLIDAYS. — Next week the *Builder* will be published on Tuesday, the 24th inst., and to ensure attention all communications for the editor must reach our office by Monday morning, the 23rd.

LEICESTER MASTER BUILDERS' ASSOCIATION.—The annual dinner of the Leicester Master Builders' Association took place on the 11th inst., Mr. Edwin Fox presiding. The Chairman having proposed the loyal toasts, Mr. H. J. Grace proposed "Success to the National Federation of Building Trades Employers, and of the Midland Centre." He was, he said, one of those who believed in workmen's unions; he thought they might be made to do a great deal of good. He would not say they might not do harm, but if they did so, it was not the fault of the union, but of those who did not use their power or control over the men in the way that it ought to be used. He had heard it said sometimes that these workmen's unions tyrannised. That might be so, but that was the fault of the officers of the union. He did not think it was the fault of the men, for he had always found the men agreeable to meet their employers in a conciliatory spirit. The men had been organised in the past better than the masters. It remained for the masters to organise and hold well together, and by so doing he was sure they would avoid any serious disputes.—Mr. Arthur Chambers, President of the Midland Centre, responded. He said it was true that they had only been reorganised for a short time, but it was twenty-one years since the National Association of Master Builders came into existence. During the last twelve months they had altered the name from the Master Builders' Association to the National Building Trades Employers' Federation, which covered rather a larger ground than the former title. It was felt that the Association, representing one of the most important trades in the country, should not only embrace one section of the trade, but that it should embody the whole of them. It was very necessary in times of any difficulty that all the combined trades should put their shoulders to the wheel and work together, rather than they should act as units, and simply have to stand upon the strength of their own federation. He quite recognised the fact that the men had as much right to organise as the masters, and he thought that the only way to bring matters in dispute to a satisfactory settlement was for both sides to meet on an equal footing, and discuss the matter in all its bearings. The National Federation was not an aggressive body, but was formed simply to protect the interests of the building trade. —Mr. A. S. Smith (President of the Birmingham Association) proposed "The Leicester Master Builders' Association." The present system of trades unionism was one which encouraged the worthless, and which compelled the worthy to do as little work as possible for their money. It behoved the builders to stand shoulder to shoulder, and resist to the uttermost this system, which was becoming a very real peril to the trade and commerce of their land.—Mr. Edwin Fox, President of the Leicester Association, responded. He said that he was happy to say that they had now no dispute whatever with their operatives. They had one at the beginning of the year in regard to the demarcation of work at the Halford-street market. Sir William Markby, the arbitrator, laid it down that a builder had a right to say whether a navvy should mix concrete or not, and it was the first time he had known a builder allowed to decide anything except paying wages on Saturday. Afterwards the masters and men had a conference with regard to other points, and he was glad to say that they came to an amicable conclusion. There were some of the best men in the world among the labouring classes—diamonds in the rough. The fault, he thought, was that although the working-classes were taught to read and write, they were not taught to think. In reference to the "go easy" principle of only laying so many bricks per day, the speaker said he thought it was their duty to do away with it once for all. They could do it if they were all united, and were determined to get a fair day's work for a fair day's pay. There was not a bricklayer or a union in the country which could say them nay. Mr. Hardington proposed "The Architects and Surveyors," and Mr. Poynor responded. Mr. Brown (Derby) proposed "The Town and Trade of Leicester," and Mr. O. Wright responded. The last toast was "The Visitors," proposed by Mr. D. Garrett, and responded to by Mr. Smith (Nuneaton).

LONDON MARKETS.—In August last the London County Council withdrew their Bill, which had been passed by the House of Commons, for the acquisition of Spitalfields Market. At their meeting on December 12, the Court of Common Council of the City of London ratified their agreement to purchase the freehold and leasehold interests in the market and its site, for 176,750*l.*, from the vendors. The market, it is stated, had been let to Mr. Robert Horner upon an eighty-four years' lease from 1882 at a rent of 5,000*l.* per annum. The Court also resolved to offer facilities to a party of Russian agriculturists, who have arrived in London, for inspecting the Central Meat and Provisions Markets at Smithfield, and the Cattle Market at Islington.

LEICESTER-SQUARE.—We read that the premises lately vacated by the Dental Hospital, on the southern side of the square, have been acquired at a cost of about 28,000*l.*, which includes the freehold, by the National Society for the Prevention of Cruelty to Children, who still need a sum of 18,000*l.* to enable them to establish their chief offices there unencumbered by liabilities.

SALE OF BOOKS ON ARCHITECTURAL SUBJECTS.—The sale of rare books and manuscripts at the rooms of Messrs. Sotheby, Wilkinson, & Hodge, Wellington-street, Strand, on December 11 and 12, included a number of works on architecture. The following prices were realised:—"The Arts Connected with Architecture in Central Italy," by J. B. Waring, 1858, 2*l.*; "Memorials of English Mediæval Churches, with an Introductory Essay on Ancient Ecclesiastical Architecture," by Charles Wickes, 1857, 7s.; "Architectural and other Designs, Studies of Trees, &c.," by James Thompson, architect, thirty-eight original drawings, 10s.; John Stow's "Survey of London," enlarged by Anthony Munday and Henry Dyson, 1633, 1*l.* 10s.; "Architectural Sketches from the Continent," 100 plates, by R. N Shaw, architect, 1858, 6s.; Serons d'Agincourt's "History of Art by its Monuments," translated, 1847, and "Ancient Wood and Iron Work in Cambridge," by Redfarn and Clark, 1886, 16s.; "The Decorations of the Garden Pavilion in the Grounds of Buckingham Palace," by L. Gruner, 1846, 5s.; "Architectural Antiquities of Normandy," by J. S. Cotman, with historical and descriptive notes by Dawson Turner, 1822, 19s.; "Remarks on the Domestic Architecture of France (Charles V. to Louis XII.)," by Henry Clutton, architect, 1853, 6s.; "Ancient Architecture of England," by John Carter, enlarged, with notes, &c., by John Britton, 1837, 17s.; the *Builder*, Vols. XLVI. to LXXVII., 1884-99, 4*l.* 4s.; "Sculptured Stones of Scotland," edited by John Stuart (Spalding Club), numerous finely-executed plates, Aberdeen, 1856-67, 10*l.*; "British Archaic Sculpturings of Cups, Circles, &c., upon Stones and Rocks," by Sir J. Y. Simpson, Edinburgh, 1867, and Dean Stubbs's "Historical Memoirs of Ely Cathedral," 1897, 8s.; A. W. Pugin's "Contrasts: A Parallel," 1841, "True Principles of Pointed or Christian Architecture," 1841, "Apology

for the Revival of Christian Architecture in England," 1843, and "Chancel Screens and Rood Lofts," 1851, all bound in one volume, 1*l.* 16s.; "Ancient and Modern Architecture," by J. Gailhabaud, 1844-6, 16s.; "Examples of Ancient Domestic Architecture," by F. F. Dollman and J. R. Jobbins, 1858-63, 1*l.* 13s.; "Collectanea Archæologica: Communications made to the British Archæological Association," two volumes, 1862, 1*l.* 6s.; "Historical and Descriptive Accounts of the Theatres of London," by E. W. Brayley, with plates by D. Havell, 1826, 1*l.* 18s.; Detached Essays and Illustrations, published by the Architectural Publication Society, 1848-52, and "Dictionary of Architecture," complete, eight volumes in five, 9*l.* 10s.; "Sculptured Monuments in Iona and the West Highlands," by James Drummond, Edinburgh, 1881, 2*l.* 4s.; "Westminster Abbey: Its History, Antiquities, and Monuments," by R. Ackermann, 1812, 3*l.* 3s.; "Dictionnaire Raisonné de l'Architecture Française du XI. au XVI. Siecles," by Viollet-le-Duc, 10 vols., 1858-68, 11*l.* 5s.; "Brick and Marble in the Middle Ages: Notes of a Tour in the North of Italy," by G. E. Street, 1855, 8s.; "The Ecclesiastical Architecture of Ireland, anterior to the Anglo-Norman Invasion, comprising an Essay on the Origin and Uses of the Round Towers of Ireland," by George Petrie, 1845, 1*l.* 17s.; "Remarks on Church Architecture," by J. L. Petit, 2 vols., 1841, "Dictionary of the Fine Arts," by J. Elmes, 1826, and "Canova on the Elgin Marbles," 1816, 17s.; "The Ecclesiastical Architecture of Scotland, from the Earliest Christian Times to the Seventeenth Century," by D. Macgibbon and T. Ross, Edinburgh, 1896, 3*l.* 9s.; "The Dolmens of Ireland: their Distribution, Structural Characteristics, and Affinities in Other Countries," by W. C. Borlase, 3 vols., with 4 maps and 800 illustrations, 1897, 2*l.* 2s.

EDINBURGH AND LEITH MASTER BUILDERS' ASSOCIATION.—The annual dinner of the Edinburgh and Leith Master Builders' Association was held on the 13th inst. in the Royal British Hotel, Edinburgh. About 120 gentlemen were present and Mr. Robert Lamb (president) occupied the chair. After the toast of "The King, Queen, and Royal Family" had been duly honoured, Mr. Lownie gave "The Imperial Forces," and Bailie Cameron replied. The Chairman proposed "The Lord Provost, Magistrates, and Town Councils of Edinburgh and Leith." Provost Mackie, Leith, in replying for the Leith Corporation, alluded to the friendly relations that existed between the two Corporations. Bailie Telfer replied on behalf of the Edinburgh Corporation. The toast of "The Edinburgh and Leith Master Builders' Association" was proposed by Mr. M'Arthy, who spoke of the good work the Association had done. He alluded to the proposal for a national federation of employers' associations and trades-unions to cement between employers and employed the feeling of common interest; and stated that if such a proposal could be carried through, he believed it would be one of the best things that could be accomplished. Councillor Forrest replied, and expressed himself in favour of national union. He was opposed to Town Councils, County Councils, and School Boards doing their own work. "The Scottish Building Trades Federation" was given by Mr. Thomas Lamb, and Mr. Alexander Drysdale replied. Other toasts followed.

ARCHÆOLOGICAL DISCOVERY.—While workmen were engaged near Falkirk, they came upon what will probably prove one of the most interesting relics of the Roman occupation of the Stirling district. It is a large stone about 19 in. broad, 10 in. thick, over 4 ft. high, and weighing probably half-a-ton. It is beautifully sculptured in high relief; the ornamentation is divided into two panels, the larger one being at the top. These panels are separated by a band about 1½ in. broad, which also is carried round both panels, meeting in an angle at the top of the stone. Under the angle is a beautiful shell-like device, delicately executed. The upper panel is completely filled by a horse and rider, the latter carrying a sword triumphantly aloft. He is arrayed in full armour, and bears a shield. The lower panel represents a naked man, a wild Celt presumably, in a fallen condition, his shield and weapon lying beside him. The profile is perfect, and the stone is in a complete state of preservation. It was found buried about 5 ft. below the surface of the ground, and it seems as if it had been so placed almost immediately after it had been sculptured. It is certainly a very fine specimen of the Roman sculptor's art, and its history will be closely investigated. Meantime, the relic has been taken possession of by Mr. Gair, Procurator Fiscal, on behalf of the Crown authorities.—*Standard*.

BRITISH FIRE PREVENTION COMMITTEE. — The executive of the British Fire Prevention Committee have arranged to test in January next a large timber floor by Millar's Karri and Jarrah Wood Co., which is to show the fire resistance of these Australian hardwoods compared with iron and concrete—a subject of the utmost interest to the great dock companies. The attendance of several distinguished foreign experts is anticipated. There will also be some door tests in Karri and Jarrah wood. We understand that among other tests to be expected early next year are tests by the Electric Timber Seasoning Co. with treated wood; and by the British Uralite Co. with fire-resisting slabs.

CAPITAL AND LABOUR.

DISPUTE BETWEEN JOINERS AND SHIPWRIGHTS, BARROW-IN-FURNESS. — In compliance with the request of the arbitrators appointed by the Joint Secretaries of the Master Builders' Association and the Joiners' Society, Barrow-in-Furness, Mr. James W. Little agreed to act as umpire to consider whether Messrs. Gradwell & Co. should employ shipwrights and handymen, or joiners, to do the work connected with the repairs to the wharf at Ramsden Dock. The arbitrators appointed by both parties to the dispute came to the unanimous decision that the joiners had failed to make out a case for their exclusive employment on the work under consideration. There was, however, a slight difference of opinion in the wording of the award, as drawn up by the respective arbitrators, and consequently it becomes necessary for the umpire to give the final decision, which was as follows, viz.:—That, in accordance with local custom and precedent, and the general practice in other parts of the country where similar work has been performed, Messrs. Gradwell & Co., Limited, are at liberty to employ shipwrights and handymen and joiners to do the work connected with the repairs to the wharf at Ramsden Dock, and that the work does not devolve exclusively on the joiners.

CO-OPERATIVE BUILDING AND JOINERY WORKS.—The December report of the Amalgamated Society of Carpenters and Joiners contains the announcement that the great majority of the 68,000 members have voted in favour of the establishment of co-operative building and joinery works. When this proposal was first mooted it received, it is stated, but scant support, but the educational influences of recent events—not the least of which are the charges put forward that the organised workers in the building trades are the principal offenders in "go easy" methods—has had its effect. The report also contains the statement that the carpenters and joiners have joined the Labour Representation Committee, and are prepared to aid in every legitimate manner the securing of the direct representation of wage-earners not only in Parliament, but also on all public bodies.

LEGAL.

DISPUTE BETWEEN THE CORPORATION OF WESTMINSTER AND THE LONDON COUNTY COUNCIL.

THE case of the Mayor, &c., of Westminster *v.* the London County Council came before a Divisional Court of King's Bench, composed of the Lord Chief Justice and Justices Darling and Channell on the 16th inst., upon a special case stated raising the question whether the County Council or the Corporation of Westminster was the proper authority to lay down conditions for construction, and to sanction the construction of wooden structures for the accommodation of spectators at public functions taking place within the area of the City of Westminster. The question arose originally out of the structures erected to accommodate spectators at the funeral of the late Queen, and the opening of Parliament by his Majesty the King on February 14; but the question also applied to the forthcoming opening of Parliament and the Coronation procession in June next. The City of Westminster claimed that, under the London Government Act of 1899 the administration of this matter within their area was handed over to them, inasmuch as the structures were wooden structures within Section 84 of the London Building Act, 1894. This section of the Act, the powers under which formerly vested in the County Council, were specifically handed over to the Corporation of Westminster, applied to the erection of special and temporary buildings and wooden structures, and provided that no person should set up any wooden structure except hoardings enclosing vacant land, exceeding 12 ft. in height, without having first obtained for that purpose a licence, which must contain conditions as to the nature of the structure, the time for which it was to be permitted to continue, and the place at which it was to be erected. The County Council contended, on the other hand, that the structures in question did not come under that Section, but under Sections 82 and 83, which also applied to temporary buildings, &c. The case found that the structures now in question, and which were erected in February last, were constructed of wood, except the nails and some of the other fastenings of the cloth or other hangings placed upon them, and that they were of a temporary character. The case also stated that questions having arisen between the two public bodies as to which was the proper authority to act under the London Building Act, the Court was asked to say which was the body (1) to control, approve, or license the structures referred to, and (2) to take proceedings against the persons who had without licensed permission or approval, erected them. The Court was also asked to say further whether such structures were or were not subject to the supervision or inspection of the District Surveyor under the Act.

Mr. Manisty, K.C., and Mr. Craies appeared for the Corporation of Westminster; and Mr. Horace Avory, K.C., and Mr. Daldy represented the County Council.

Mr. Manisty argued that upon the proper construction of the Acts his clients had had the power of dealing with these structures transferred to them.

Mr. Avory said the only desire of the two bodies was to obtain a decision in order that they might exercise their duties under the different sections and avoid a conflict of jurisdiction. He suggested that the only way to reconcile these sections and make them work harmoniously was to hold that Section 84 of the Building Act applied to structures like bicycle and other sheds which were put up at the back or front of a house, which were not temporary in the sense of being put up and taken down in a week or so, but which were to last for several years.

In the result, the Lord Chief Justice in giving judgment said it was quite impossible to deal with every case that might arise. The question here had reference to a number of structures made wholly, except in regard to the nails, of wood, and he wished to guard himself against being misunderstood as laying down any rule which might govern some special case, which might give rise to other considerations. In his opinion, the broad question of whether the County Council or the Corporation was the proper Authority to lay down conditions and to sanction the construction of wooden structures which might have to be erected on the occasion of public functions in the City of Westminster, should be decided in favour of the Corporation of the City of Westminster. The Court did not propose to answer the third question as to the supervision of the District Surveyor, as to do so would, they thought, lead to difficulties. The Court, however, thought that the Corporation of Westminster was the Authority which had the right to exercise the powers of Section 84 of the Building Act.

The other judges concurred.

A WOLVERHAMPTON ARCHITECT AND HIS FEES.

AT the Wolverhampton County-court a few days ago before Judge H. Roberts, Mr. Charles Henry Martin, architect, of Wolverhampton, sued Mr. George Head, a publican, of Horseley Fields, for the sum of 41*l.* 18s., as his commission for the preparation of plans, specifications, &c., for the erection of a house.

Mr. T. Dallow was the solicitor for the plaintiff, and Mr. Tildesley appeared for the defendant.

The evidence of the plaintiff was to the effect that on May 26 the defendant called upon him and stated that he wanted him to prepare plans for the erection of a villa-residence. Nothing was said at the interview as to what the house was to cost, and plaintiff, with the assistance of his son, set to work and prepared the plans. These were submitted to and approved by the defendant, and by his instructions the specifications were prepared, estimates of quantities got out, and tenders invited.

The lowest tender sent in was 687*l.* 10s. This, the defendant said, was more than he wished to expend, and he desired that the plans should be reduced so as to bring the cost of the house within 400*l.* This was done by excluding several items in the plans. Tenders were again invited, and one was sent in for 417*l.* 10s. The defendant said he would not go beyond 350*l.* Other alterations were made in the plans to reduce the cost, but ultimately the defendant declined to proceed with the plans prepared by the plaintiff, and had his house erected by another builder. In September the plaintiff had an interview with the defendant, and it was suggested that he should receive 20*l.* as remuneration. He refused. In the account sent in he charged 2½ per cent. on the lost building for the preparing of the plans, 2½ per cent. for getting out the quantities for the builders, 8*l.* 10s. for altering the original plans, and 1*l.* 1s. for sketch copy for the District Council. The house not having been built from his plans, he deducted ¼ per cent.

In cross-examination plaintiff denied that he told defendant that his charge would only amount to 2½ per cent. on the total cost of the building.

Mr. F. T. Beck, architect, said he had carefully examined the plans and specifications prepared by the plaintiff. He considered the charges fair and reasonable, and such as were the recognised charges in the profession.

The defence was that the plaintiff exceeded his instructions by drawing out plans of a more elaborate character than was intended.

Defendant, on being put into the box, denied that any plans were shown him until the first batch of tenders arrived.

After further evidence his Honour awarded judgment in favour of the plaintiff for the sum of 40*l.* 19s., at the same time expressing the opinion that the statement made by the defendant that he was never shown any plans until after the tenders were sent in was not accurate.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

14,774.—A DOOR-CHECK: *Russell & Erwin Manufacturing Co.*—The check, which is particularly intended for swing doors, has a piston-rod, at the end of which is a plate having a V-shaped groove for

the pin of a crank upon a rod which is joined to the frame of the door. When the door is being opened the crank draws out the piston, which will in turn retard the motion of the door when it is being closed. One end of the rod that joins the door and the crank shaft has a stud that moves in a slotted plate beneath the woodwork above the door, and the other end of the rod is clamped on to the shaft.

14,778.—AN ARTIFICIAL COMPOUND FOR BRICKS, STONE, &C.: *A. H. Croizier and A. E. Thomine.*—The bricks, tiles, cornices, mouldings, and other objects are fashioned under pressure of a compound of slaked lime, sand, loam, or clay, or it may be of clay and lime only, and for the sand may be used blast-furnace or similar slag. The moulded articles are exposed to steam at a high pressure in a closed vessel.

14,781.—AN APPLIANCE FOR INCANDESCENT GAS-BURNERS: *W. Kractke.*—In order that the self-igniter may not be damaged by the flame and be readily removed, the pellet is mounted centrically on a detachable fitting, which has a peg for the socket in the head of the burner, and arms that carry the mantle-rod socket and a perforated plate.

14,822.—APPARATUS FOR EXCAVATION PURPOSES: *W. Taylor and W. S. Hubbard* (*Taylor & Hubbard*).—Side-frames join the bucket to pins upon two levers, the levers being rigidly secured to a shaft carried by bearings in plates upon the jib, and between them is fastened a third lever, which a girder connects to the arm of a pivoted quadrant in gear with a worm. Of the gear-wheels that serve for the working of the worm from the crank-shaft of the engine, the last bevel-wheel is geared to two bevel-wheels loose upon the shaft, whereof either can be fastened to the shaft with a double-sliding friction cone. A friction-cone helps to control the position of the bucket in respect of the soil.

14,827.—A VICE: *C. Rauhe.*—One leg or both legs are pivoted on to a bar which has an extension that can be fastened upon a table. The legs have jaws and are adjusted with a screw; they have also fittings that will serve for pressing, shearing, punching, and similar operations. The distance between the legs can be varied by joining one of them adjustably to the bar.

14,847. — CONSTRUCTION OF ROOFS, WALLS, FLOORS, &c.: *F. H. Turner.*—Blocks of terra-cotta or fire-clay are fashioned with flat recessed, flanged bottoms, convexed tops, partitions, and side-ribs to be laid upon the girder flanges. There are openings between the ribs through which fine concrete may be filled in, and until concrete has been run in the terra-cotta tubes are held in position with distance-blocks of iron, wood, or fire-clay. The girders may have triple flanges. Ribs may be attached to the webs below the neutral axis or central line.

14,938.—PROCESS OF MOULDING BLOCKS, TILES, &C.: *P. Wernicke.*—A shapened box having a sieve bottom feeds the material into the mould, where it is stirred with the wires of a frame hung upon a rod, excess of material being fed to the edges or elsewhere for blocks with thick edges, &c., by means of the spacing of the wires. After the mould has been filled the bottom of the box is closed by the lowering of the wires between those of the sieve. In another form of grating the mould can be directly filled.

14,940.—AN ATTACHMENT FOR HATCHETS: *G. M. Fennell.*—The handle, the head, and the blade are formed of sheet metal and are brazed or rivetted together, and the blade may be caused to abut against the end of the head, which may be made in one piece with the blade; the upper end of the handle is shaped so as to constitute a wedged part of the tool.

14,976.—AN ANTI-CORROSIVE PREPARATION: *F. F. Johnstone.*—A preparation for the prevention and removal of corrosion and incrustation is made of an admixture of eucalyptus leaves, creosote, and chloride of ammonia, for use in liquid or pulverised form in the parts of—eucalyptus leaves, 330 lbs.; creosote, 1 oz.; and chloride of ammonia, 130 lbs., mixed with water, 1,100 gals.

15,001.—AN ELECRICITY CURRENT METER: *A. Honig.*—The axle of a continuous current am-meter or volt-meter carries a pointer and a ring-shaped permanent magnet, at one side of which is a small air gap in which are set fixed circuit conductors in order that the magnet-poles shall move across them with the turning of the axle; a portion of a wire coil wound in a former having a flat part in the gap constitutes the conductors. For large current an am-meter has a conducting-strip (in place of a coil) of which the part near the axle is turned into a vertical plane; the interposition of an insulator provides for the shunting of the strip by the main conductor, and any scale required can be produced by a variation of the thickness of the coil or conducting-strip in the air-gap. The former of a portable intrument wherein a pressure-measuring coil is wound will conduct the current that is to be computed, or a current-supporting strip can be adopted for the pressure coil.

15,012.—A LIFT VALVE: *W. R. Skinner and A. Owen.*—The valve is adapted for a high-pressure service and for steam and water service. An enlarged cone is fashioned at the upper end of the valve-spindle with a seat in the casing upon which it is forced with nuts upon the spindle, a recess in the cone takes the squared end of the lower and screwed portion of the spindle, and a hand-wheel works the valve; a cone-shaped seat in the casing fits against a corresponding ring upon the removable seating, which a ferrule that is screwed into a notched ring in a recess in the casing maintains in its proper position. For a small valve an internally-screwed portion of the casing will take the ferrule.

15,021. — ELECTRODES FOR ARC LAMPS: *V. Alexandroff.*—To save the expenditure of energy with the employment of pure carbons the inventor makes a compound of carbon and oxides or salts of magnesium, zinc, aluminium, silver, copper, cerium, thorium, zirconium, calcium, yttrium, or other suitable metals, and mixes a paste of asphaltum dissolved in turpentine, finely pulverised coke, sixty-three parts; graphite, thirty parts; lampblack, seven parts; and magnesia, one part; which he presses into rods that are rendered dense enough by alternately baking them and moistening them with a solution of sugar.

15,035.—MANUFACTURE OF BRICKS: *F. Thompson.*—The material consists of about two parts of clay dust mixed in a dry state with three parts of riddled sawdust; it is then wetted in a pug-mill. The dried bricks are slowly burned in a kiln until the sawdust has been consumed. The inventor claims that the articles are fire and sound proof, and available for being nailed or plastered, for partitions and party-walls, and for a substitute for timber in building construction.

15,057.—A SHED FOR PURPOSES OF SAFETY: *G. A. Nahnsen.*—The sheds, which are devised for use in the manufacture or storage of explosive substances, are built above cellars that have inclined floors and double walls, and are divided into vaulted compartments. In order to lessen damage that may be caused by an explosion, the cellars are charged with water, ashes, infusorial earth, or other suitable materials.

15,074.—A TOOL FOR USE IN SUBMARINE OPERATIONS: *B. H. Coffey.*—Rocks under water are broken by the fall of a weighted chisel through an air-chamber. Spuds and anchors hold the floating stage in which is an opening for the air-chamber that is moved about its vertical axis by means of a separated engine. The air-chamber is open at its base and closed at its top, and is fitted with guides for the heavy weight to which the chisel is keyed. A rod connects the weight to a cross-head that slides in vertical guides upon the derrick, and is lifted or lowered with a chain and drum worked from the engines. The ends of pivoted arms extending from the chamber may be hooked on to the cross-head for the lowering or lifting of the chamber when the fixing-clamp has been opened. In a variant form there are projections from the top of the weight which will engage with jaws upon a spring-regulated catch joined to the rod. A wedge automatically liberates the catch, whereby the weighted chisel will freely fall as the catch rises to the top of the air-chamber.

15,095. — ELECTRICAL CURRENT METERS: *A. Wright and Reason Manufacturing Co.*—In order to obtain powerful action, a demand indicator, worked with electro-magnetism, has a large amount of iron in its composition, whilst the residual magnetism may for practical purposes be neglected. In one form of the meter the coil that conveys the current has two iron coils (one of which is fixed) having end arms; the other coil can be turned upon its axis by magnetical repulsion between the arms and has a fast and loose pointer which traverse a scale, the latter pointer being moved by a projection from the other one and resting at the point of highest deflection. The motion of the movable core may be retarded with a vane dipped into glycerine, and a separate maximum pointer may be discarded for the engagement of a ratchet-wheel mounted upon the movable core with a pawl which will obviate the reversal of motion. Confer also No. 18,371 of 1897.

15,123.—APPLIANCES FOR ARC-LAMPS: *Nettlefolds, Ltd., and W. E. Symons.*—The top plate of a solenoid lamp carries a differentially-wound solenoid together with iron tubes at the sides which support an insulated and lower carbon-holder; an iron core of which the iron arms are guided by the side-tubes sustains the upper carbon-holder, whilst interposed copper gauze or iron tubes cased with brass or copper will prevent an actual contact. A flexible conductor establishes connexion with the upper carbon-holder.

15,132.—A WRENCH FOR WORKMEN'S USE: *W. King.*—In order that the disc shall not be turned backwards whilst a loose nut is being screwed up the inventor fashions the disc of a ratchet wrench with an extension upon each side of the head and with milled heads; the disc is either pressed upon by hand or pressed against the work.

15,136.—APPLIANCES FOR HOISTS AND ELEVATORS: *C. Wüst.*—A motor which is affixed to the cage works an electrically-driven hoist or elevator, being geared with drums that wind and unwind the lifting ropes, which pass to the upper end of the well. In a modified shape there are weights which counterbalance the weight of the cage and portion of its load, and drums upon the shafts serve for the winding and unwinding of ropes that are attached to the bottom of the well.

15,186.—DOMESTIC WATER-SUPPLY: *M. M. Brophy.*—A single nozzle is made to supply both hot and cold water, the hot water being provided by admitting steam into the cold water. In order to prevent the parts adjacent to the nozzle from becoming hot, the inventor contrives that steam shall pass to the water-heater and water into the encompassing vessel, and fits rods (formed of two parts with overlapping ends clamped together) and cocks for regulating the flow of the steam and the water; a flanged pipe joins the containing-vessel to the nozzle, which has a T-shaped chamber into which the rods are inserted. The rods are fastened to crank-pins upon discs within the chamber, and of the handles that turn them one is caused to overlap the other, whereby the water-cock will be opened together with the steam-cock. Confer also Nos. 12,163 of 1899 and 15,187 and 21,647 of 1900.

MEETINGS.

FRIDAY, DECEMBER 20.

Architectural Association Discussion Section.—Mr. Howard Humphreys on "The Manufacture, Testing, and Uses of Portland Cement." 7.30 p.m.

Institution of Mechanical Engineers.—Mr. W. Campbell, B.Sc., on "The Microscopical Examination of the Alloys of Copper and Tin." 8 p.m.

Institution of Civil Engineers (*Students' Meeting*).—Mr. A. M. Morgan on "Transmission Dynamometers." 8 p.m.

Glasgow Architectural Craftsmen's Society.—"Tiles: (*a*) Mr. W. G. Peddie on "Wall and Floor Tiles"; (*b*) Mr. J. M'Kim on "Substitutes for Tiles." 8 p.m.

WEDNESDAY, JANUARY 1.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

FRIDAY, JANUARY 3.

Architectural Association.—Mr. J. A. Gotch on "The Development of Domestic Architecture from the Twelfth to the Eighteenth Century," illustrated by lantern views. 7.30 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

December 6.—By E. GANDY (at Northwich).

Lostock Gralam, Cheshire.—Park Farm, 119 a. 2 r. 21 p., f.	£6,000
Hall Field, &c., 28 a. 1 r. 35 p., f.	1,275

By HENRY MANLEY & SON (at Whitchurch).

Iscoyd, Flint.—Two freehold houses and 17 a. 3 r. 12 p.	1,275
A freehold holding, 6 a. 2 r. 28 p.	480
Various enclosures, 50 a. 2 r. 37 p., f.	2,000
Pen-y-Bryn Farm, 82 a. 0 r. 29 p., f.	3,200
The Bank Farm, 58 a. 1 r. 4 p., f.	2,225
Penley, Flint.—Three enclosures, 14 a. 1 r. 22 p., f.	195

By EASTMAN BROS.

Norwood.—59 to 79 (odd), Penge-rd., u.t. 65½ yrs., g.r. 83*l.*, r. 428*l.* (in lots)	4,665

By KROENIG & Co.

Hendon.—Stratford-rd., Laurel and Lilac Cottages, u.t. 80 yrs., g.r. 9*l.*, r. 80*l.* 12s.	590
Sunningfields-rd., Brooklyn, u.t. 77½ yrs., g.r. 10*l.* 10s., r. 63*l.*	580

By MOORE, SMALLMAN, & Co.

Holloway.—39, Girdlestone-rd., area 920 ft., f., r. 52*l.*	700
Brixton.—Brighton-ter., i.g.r. 36*l.*, u.t. 9 yrs., g.r. nil	265

By D. SMITH, SON, & OAKLEY.

Hornsey.—Middle-lane, f.g.r., 39*l.*, reversion in 78 yrs.	1,055
Highgate.—Cromwell-pl., f.g.r. 10*l.* 10s., reversion in 79 yrs.	285
Cromwell-avenue, f.g.r.'s 30*l.*, reversion in 79 yrs.	830

December 9.—By PERCIVAL HODSON.

Hoxton.—130 to 138 (even), Hoxton-st., u.t. 60 yrs., g.r. 40*l.*, r. 287*l.* 10s.	3,395
Stamford Hill.—135, 137, and 139, High-rd., u.t. 76 yrs., g.r. 30*l.*, r. 104*l.*	500

By MAY & ROWDEN.

Notting Hill.—18, 20, and 24, St. Charles'-sq., u.t. 71 yrs., g.r. 25*l.* 10s., r. 273*l.*	1,495

December 10.—By MUSKETT & SONS.

Wood Green.—1 to 4, King's-rd., u.t. 64½ yrs., g.r. 10*l.*	630

December 11.—By COLES & Co.

Bayswater.—84, Queen's-rd., u.t. 46½ yrs., g.r. 10*l.*, r. 150*l.*	2,120
Bowes Park.—29 and 31, Whittington-rd., u.t. 77 yrs., g.r. 14*l.* 14s., r. 65*l.*	610
Oxford-st.—1, Hanway-pl., u.t. 40 yrs., g.r. 5*l.*, r. 60*l.*	613

By G. HERBERT-BURNS.

Dalston.—80, Greenwood-rd., u.t. 48½ yrs., g.r. 6*l.* 10s., r. 42*l.*	360

By G. PEARCE & SONS.

Manor Park.—35, Sheridan-rd., u.t. 96 yrs., g.r. 4*l.* 10s., e.r. 28*l.*	200

By GODFREY C. LAMBERT (at Croydon).

Croydon.—33, 35, 37, and 39, Parsons Mead, f., r. 107*l.* 16s.	1,470
Parsons Mead, f.g.r. 4*l.*, reversion in 44½ yrs.	114
14 and 15, Wandle-rd., f., r. 76*l.* 18s.	900

December 12.—By DOLMAN & PEARCE.

Chelsea.—96, Oakley-st., u.t. 65 yrs., g.r. 10*l.* 10s., r. 70*l.*	830

By MOSS & GRAY.

Old Ford.—152B, Roman-rd., u.t. 42½ yrs., g.r. 6*l.*, r. 42*l.*	325
Bromley-by-Bow.—2, Box-st., and 1, 3, and 5, Eastward-st., u.t. 63 yrs., g.r. 6*l.*	320
13, 15, and 17, Eastward-st., u.t. 61½ yrs., g.r. 10*l.* 10s.	190
Poplar.—2, Flint-st., u.t. 61 yrs., g.r. 3*l.*, r. 32*l.*	295
113, Brunswick-rd., u.t. 38 yrs., g.r. 3*l.* 10s.	210

By C. C. & T. MOORE.

Bishopsgate.—11, 12, and 12½, Artillery-passage, f.	1,810
Whitechapel.—64, Great Prescott-st., f., r. 100*l.*	1,700
Bermondsey.—29 and 31, Webster-rd., u.t. 44½ yrs., g.r. 10*l.*	530
Stratford.—12 and 13, Forest-lane, and 2A, Maryland Pk., u.t. 87 yrs., g.r. 2*l.*	1,250
Bermondsey.—Virginia-row, f.g.r. 16*l.* 5s., reversion in 94 yrs.	255

By SIM & RANDALL.

Old Ford.—433, 435, and 437, Old Ford-rd., and 1, Autumn-st., f., r. 104*l.* £990
13 and 15, Beale-rd., u.t. 62 yrs., g.r. 10*l.* 380
Walthamstow.—7, Walpole-rd., u.t. 89½ yrs., g.r. 3*l.* 3s. 120

By WRIFORD & DIXONS.

Islington.—12, Oxford-ter., u.t. 452 yrs., g.r. 8*l.*, r. 45*l.* 510

By STIMSON & SONS.

St. John's Wood.—67, Avenue-rd., u.t. 35 yrs., g.r. 17*l.* 17s. 6d., r. 140*l.* 1,400
Battersea.—157, Battersea Pk.-rd., u.t. 60¾ yrs., g.r. 8*l.*, e.r. 70*l.* 440
30, 32, and 34, Acre-st., u.t. 72¼ yrs., g.r. 10*l.* .. 550
Camberwell.—105, Grosvenor-pk., u.t. 21½ yrs., g.r. 5*l.*, r. 36*l.* 265
Balham.—3 and 4, Albert-ter., u.t. 62 yrs., g.r. 13*l.*, r. 58*l.* 500
Norwood.—127, Gipsy-hill, u.t. 76½ yrs., g.r. 10*l.*, r. 55*l.* 630
Kentish Town.—19, Spencer-rd., f., r. 30*l.* 500
21, Spencer-rd., u.t. 67 yrs., g.r. 6*l.*, r. 30*l.* 375
Shepherd's Bush.—28, Rockley-rd., f., e.r. 42*l.* .. 475
Kennington.—9a, Royal-rd., u.t. 47 yrs., g.r. 1s., r. 36*l.* 410
Dulwich.—53, Henslowe-rd., u.t. 73 yrs., g.r. 4*l.* 10s., r. 28*l.* 235
December 13.—By BELLHAM, WILLIAMS, & CO.
Wimbledon.—19 and 20, Park-rd., u.t. 76 yrs., g.r. 14*l.*, r. 80*l.* 700

By COCKETT & HENDERSON.

Wanstead.—Grove-rd., Holmwood, f., e.r. 90*l.* .. 950

By J. C. PLATT.

Acton.—1 and 2, The Villas, u.t. 96 yrs., g.r. 10*l.*, r. 65*l.* 470
Hammersmith.—31, Rivercourt-rd., u.t. 75 yrs., g.r. 10*l.* 10s., r. 40*l.* 550
Hastings, Sussex.—55, High-st., and 5, Winding-st., f., r. 100*l.* 1,900
51, Emanuel-rd., f., r. 19*l.* 10s. .. 298
St. Leonards-on-Sea, Sussex.—Pevensey-rd., St. John's Villa, and Grosvenor House, u.t. 64½ yrs., g.r. 30*l.*, r. 150*l.* 1,525

By SCOBELL & LAKE.

Maida Vale.—199, Sutherland-av., u.t. 38½ yrs., g.r. 9*l.*, r. 80*l.* 835
Totteridge.—Mayes-lane, an enclosure of land, 4a. 2r. 10p., f. 300
Hornsey.—Cross-lane, a freehold cottage, stabling premises, and smithy, r. 108*l.* 1,950
New Barnet, Herts.—Station-rd., Errol Lodge, u.t. 60½ yrs., g.r. 7*l.* 10s., r. 40*l.* 260

By A. J. SHEFFIELD.

Poplar.—19 and 20, Grove-villas, f., r. 65*l.* 750
1, 3, and 5, Willis-st., u.t. 43 yrs., g.r. 3*l.* 10s. 520

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 12 0	per 1,000 alongside, in river
Rough Stocks and Grizzles	1 10 0	,, ,, ,,
Facing Stocks	2 12 0	,, ,, ,,
Shippers	2 8 0	,, ,, ,,
Flettons	1 8 0	,, at railway depôt.
Red Wire Cuts	1 12 0	,, ,, ,,
Best Fareham Red	3 11 0	,, ,, ,,
Best Red pressed Ruabon Facing.	5 5 0	,, ,, ,,
Best Blue Pressed Staffordshire	4 6 6	,, ,, ,,
Do., Bullnose	4 10 0	,, ,, ,,
Best Stourbridge Fire Bricks	4 4 0	,, ,, ,,
GLAZED BRICKS		
Best White and Ivory Glazed Stretchers	13 0 0	,, ,, ,,
Headers	12 0 0	,, ,, ,,
Quoins, Bullnose, and Flats	17 0 0	,, ,, ,,
Double Stretchers	19 0 0	,, ,, ,,
Double Headers	16 0 0	,, ,, ,,
One Side and two Ends	19 0 0	,, ,, ,,
Two Sides and one End	20 0 0	,, ,, ,,
Splays, Chamfered, Squints	20 0 0	,, ,, ,,
Best Dipped Salt Glazed Stretchers and Headers	12 0	,, ,, ,,
Quoins, Bullnose, and Flats	14 0 0	,, ,, ,,
Double Stretchers	15 0 0	,, ,, ,,
Double Headers	14 0 0	,, ,, ,,
One Side and two Ends	15 0 0	,, ,, ,,
Two Sides and one End	15 0 0	,, ,, ,,
Splays, Chamfered, Squints	14 0 0	,, ,, ,,
Seconds Quality White and Dipped Salt Glazed	2 0 0	,, less than best.

	s. d.	
Thames and Pit Sand	7 3	per yard, delivered.
Thames Ballast	6 0	,, ,,
Best Portland Cement	32 0	per ton, delivered.
Best Ground Blue Lias Lime	25 0	,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	11s 6d.	per yard, delivered.
Stourbridge Fire-clay in sacks,	28s. od.	per ton at rly. dpt.

PRICES CURRENT (*Continued*).

STONE.

	s. d.		
Ancaster in blocks	1 11	per ft. cube, deld.	rly. depôt.
Bath ,,	1 7	,,	,,
Farleigh Down Bath	1 8	,,	,,
Beer in blocks	1 6½	,,	,,
Grinshill ,,	1 10	,,	,,
Brown Portland in blocks	2 2	,,	,,
Darley Dale in blocks	2 4	,,	,,
Red Corsehill ,,	2 5	,,	,,
Red Mansfield ,,	2 4	,,	,,
Hard York in blocks	2 10	,,	,,
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	s. d. 2 8	per ft. super at rly. depôt	
,, ,, 6 in. Rubbed Ditto	3 0	,,	,,
,, ,, 3 in. sawn both sides slabs (random sizes)	1 3	,,	,,
,, 2 in. self-faced Ditto	0 9½	,,	,,
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube. deld. rly. depôt	
,, ,, 6-in sawn both sides landings	2 7	per ft. super. deld. rly. depôt.	
,, ,, 3-in. do.	1 2½	,,	,,

SLATES.

In.	In.	£ s. d.	
20 × 10	best blue Bangor	11 5 0	per 1000 of 1200 at rly. dep
,,	best seconds ,,	10 15 0	,, ,,
16 × 8	best ,,	6 2 6	,, ,,
20 × 10	best blue Portmadoc	10 18 0	,, ,,
16 × 8	best blue Portmadoc	6 0 0	,, ,,
20 × 10	best Eureka unfading green	11 2 6	,, ,,
16 × 8	,, ,,	6 15 0	,, ,,
20 × 10	Permanent green	10 0 0	,, ,,
16 × 8	,, ,,	5 12 6	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles	41 6	per 1,000 at rly. depôt
Hip and valley tiles	3 7	per doz. ,, ,,
Best Broseley tiles	48 6	per 1,000 ,, ,,
Hip and valley tiles	4 0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 ,, ,,
Do. ornamental Do.	60 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles	3 9	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes)	50 9	per 1,000 ,, ,,
Hip tiles	4 1	per doz. ,, ,,
Valley tiles	3 8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	15 10 0
Deals: best 3 by 9	13 0 0	14 10 0
Battens: best 2½ in. by 7 in. and 8 in. and 3 in. by 7 in. and 8 in.	10 0 0	11 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	,, ,, ,,
2 in. by 4 in. and 2 in. by 6 in.	8 10 0	9 10 0
2 in. by 4½ in. and 2 in. by 5 in.	8 0 0	9 0 0
Foreign Sawn Boards—		
1 in. by 1½ in. by 1½ in.	0 10 0	more than battens.
¾ in.	1 0 0	,,
Fir timber: Best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Swedish balks	2 15 0	3 0 0
Pitch pine timber (32 ft.)	3 0 0	3 10 0

JOINERS' WOOD. At per standard.

White Sea: First yellow deals, 3 in. by 11 in.	22 0 0	23 0 0
3 in. by 9 in.	20 0 0	21 0 0
Battens, 2½ in. and 3 in. by 7 in.	15 0 0	16 0 0
Second yellow deals, 3 in. by 11 in.	17 0 0	18 0 0
,, ,, 3 in. by 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	12 0 0	13 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	12 10 0	13 10 0
Battens, 2½ in. and 3 in. by 7 in.	10 10 0	11 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	19 0 0	20 0 0
Do. 3 in. by 9 in.	16 0 0	17 0 0
Battens	12 10 0	13 0 0
Second yellow deals, 3 in. by 11 in.	14 0 0	15 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	11 0 0	12 0 0
Third yellow deals, 3 in. by 11 in.	11 10 0	12 10 0
Do. 3 in. by 9 in.	11 0 0	12 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	13 10 0	14 10 0
,, ,, ,, 3 in. by 9 in.	12 10 0	13 0 0
Battens	10 10 0	11 10 0
Second white deals 3 in. by 11 in.	12 10 0	13 0 0
,, ,, ,, 3 in. by 9 in.	12 0 0	12 10 0
,, ,, battens	9 10 0	10 10 0
Pitch pine: deals	16 0 0	18 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	32 0 0	33 10 0
Broads (12 in. and up)	2 0 0	more.
Oddments	22 0 0	24 0 0
Seconds, regular sizes	24 10 0	26 10 0
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—Planks, per ft. cube	0 3 6	0 4 6
Danzig and Stettin Oak Logs—Large, per ft. cube	0 2 6	0 3 0
Small ,, ,,	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as Inch	0 0 8	0 0 7
¾ in. do. do.	0 0 7	- - -

PRICES CURRENT (*Continued*)

WOOD.

JOINERS' WOOD. At per standard.

	£ s. d.	£ s. d.
Dry Mahogany—		
Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	16 0 0	20 0 0
American Whitewood Planks—		
Per ft. cube	0 3 0	0 3 6
Prepared Flooring—	Per square	
1 in. by 7 in. yellow, planed and shot	0 13 0	0 16 6
1 in. by 7 in. yellow, planed and matched	0 13 6	0 17 6
1¼ in. by 7 in. yellow, planed and matched	0 15 0	1 0 0
6 in. at 6d. per square less than 7 in.		
1 in. by 7 in. white, planed and shot	0 11 0	0 12 6
1 in. by 7 in. white, planed and matched	0 11 6	0 13 6
1¼ in. by 7 in. white, planed and matched	0 13 6	0 15 6
6 in. at 6d. per square less than 7 in.		

JOISTS, GIRDERS, &c.

	In London, or delivered to Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders ,, ,,	8 0 0	9 0 0
Angles, Tees and Channels, ordinary sections	8 2 6	9 2 6
Flitch Plates	8 10 0	9 0 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 0 0	8 0 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON.—		
Common Bars	8 0 0	8 10 0
Staffordshire Crown Bars, good merchant quality	8 10 0	9 0 0
Staffordshire "Marked Bars"	10 10 0	- - -
Mild Steel Bars	9 0 0	9 10 0
Hoop Iron, basis price	9 5 0	9 15 0
,, ,, galvanised	16 0 0	- - -
(* And upwards, according to size and gauge.)		
Sheet Iron, Black.—		
Ordinary sizes to 20 g.	10 0 0	- - -
,, ,, to 24 g.	11 0 0	- - -
,, ,, to 26 g.	12 10 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality.—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	12 10 0	- - -
,, ,, 22 g. and 24 g.	13 0 0	- - -
,, ,, 26 g.	14 0 0	- - -
Sheet Iron, galvanised, flat, best quality.—		
Ordinary sizes to 20 g.	16 10 0	- - -
,, ,, 22 g. and 24 g.	17 0 0	- - -
,, ,, 26 g.	18 10 0	- - -
Galvanised Corrugated Sheets.—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	12 10 0	- - -
,, ,, 22 g. and 24 g.	13 0 0	- - -
,, ,, 26 g.	14 0 0	- - -
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 5 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.	14 5 0	- - -
Cut nails, 3 in. to 6 in.	9 10 0	10 0 0
(Under 3 in. usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3 lbs. & up.	13 5 0	- - -
Pipe in coils	13 15 0	- - -
Soil Pipe	16 5 0	- - -
ZINC—Sheet—		
Vieille Montagne ton	24 10 0	- - -
Silesian	24 0 0	- - -
COPPER—		
Strong Sheet per lb.	0 1 0	- - -
Thin ,,	0 1 1½	- - -
Copper nails ,,	0 1 1½	- - -
BRASS—		
Strong Sheet ,,	0 0 11	- - -
Thin ,,	0 1 1	- - -
TIN—English Ingots ,,	0 1 3	- - -
SOLDER—Plumbers' ,,	0 0 6½	- - -
Tinmen's ,,	0 0 8	- - -
Blowpipe ,,	0 0 9	- - -

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
,, ,, fourths	2¾d. ,, ,,
21 oz. thirds	3¼d. ,, ,,
,, ,, fourths	3¼d. ,, ,,
26 oz. thirds	4¼d. ,, ,,
,, ,, fourths	4¼d. ,, ,,
32 oz. thirds	5¼d. ,, ,,
,, ,, fourths	5¼d. ,, ,,
Fluted sheet, 15 oz.	3¼d. ,, ,,
,, ,, 21 ,,	4¼d. ,, ,,
½ Hartley's Rolled Plate	2¾d. ,, ,,
⅝ ,, ,, ,,	3¼d. ,, ,,
¾ ,, ,, ,,	3¾d. ,, ,,

OILS, &c.

	£ s. d.
Raw Linseed Oil in pipes per gallon	0 2 10
,, ,, ,, in barrels ,,	0 2 11
,, ,, ,, in drums ,,	0 3 1
Boiled ,, ,, in pipes ,,	0 3 0
,, ,, ,, in barrels ,,	0 3 1
,, ,, ,, in drums ,,	0 3 3
Turpentine, in barrels ,,	0 2 3
,, in drums ,,	0 2 6
Genuine Ground English White Lead per ton	21 10 0
Red Lead, Dry ,,	21 10 0
Best Linseed Oil Putty per cwt.	0 8 6
Stockholm Tar per barrel	1 12 0

[*See also next page.*

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be delivered
Municipal Offices	Mountain Ash U.D.C.	75*l.*	Feb. 4
*New Buildings at Langho, near Blackburn	Chorlton, &c., Jt. Asylums Com.	200*l.*, 150*l.* and 100*l.*	April 4

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., Supplied by	Tenders to be delivered
Works at Baths, Gannow	Burnley Corporation	Borough Surveyor, Town Hall, Burnley	Dec. 24
Cottage Home, Upton-by-Chester	Chester Guardians	T. M. Lockwood & Sons, Architects, 80, Foregate-st., Chester	do.
Retaining Wall, &c., Hartest	Melford (Suffolk) R.D.C.	W. Carver, Surveyor, Suffolk-road, Sudbury, Suffolk	do.
Six Houses, St. Luke's-road, Pontnewynydd		Fisher & Sons, Architects, Club Chambers, Pontypool	do.
Church, Dunnottar, Stonehaven, N.B.	Kilmarnock Town Council	G. P. K. Young, Architect, 42, Tay-street, Perth	Dec. 25
Paving Works, Portland-street	Keighley Corporation	R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock	do.
Surveyor's Materials	Dumbarton Town Council	W. H. Hopkinson, Civil Engineer, Town Hall, Keighley	Dec. 26
Whinstone, &c.		Burgh Surveyor, 16, Quay-street, Dumbarton	do.
House, Coedpoeth, Wales	Morley (Yorks) Corporation	W. L. Jones, Architect, Bangor	Dec. 27
Stabling, &c.	Somerset County Council	W. E. Putman, Civil Engineer, Town Hall, Morley	do.
Court House, Dulverton	Penzance Corporation	W. J. Willcox, County Surveyor, 1, Belmont, Bath	do.
Surveyor's Materials	Woodford (Northants) P.C.	F. Latham, Borough Engineer, Public Buildings, Penzance	do.
Steel Tower, &c.		— Lloyd, Engineer, Thrapston	Dec. 28
Entrance Lodge, Dunollie, Oban, N.B.	Lancaster Tramways Committee	K. Macrae, 5, Argyll-street, Oban	do.
Car Shed, &c., Thurnham-street	Rudry (Wales) School Board	T. C. Hughes, Town Hall, Lancaster	do.
Schools, &c.	St. Mary U.D. School Board	B. Lawrence & Son, Architects, Newport, Mon	Dec. 30
Alterations to Schools, Pear Tree Green, Southampton	Leith Gas Commissioners	G. C. Gandy, Woolston, Southampton	do.
Footbridge, Granton, N.B.	Queenstown (Ireland) U.D.C.	W. R. Herring, Engineer, New-street, Edinburgh	do
Portland Cement		Kirkby & Doran, Engineers, Queenstown	do.
16 Cottages, Newbiggin-by-Sea	Dewsbury Corporation	T. Welsh, Co-operative Stores, Newbiggin	do.
Covered Market, Crackenedge-lane	Middleton (Lancs) Corporation	H. Dearden, Civil Engineer, Town Hall, Dewsbury	Dec. 31
Paving Works, Langton and Hornby-streets	Preston Corporation	W. Welburn, Borough Surveyor, Town Hall, Middleton	do.
Underground Convenience, Church-street	Glasgow Parish Council	Borough Surveyor, Town Hall, Preston	do.
Hospital, Duke-street	Shoreditch Guardians	J. Baxter, 243, St. Vincent-street, Glasgow	do.
*Tar Paving Yards at Branch School		F. J. Smith, Architect, Parliament Mansions, Victoria-st., S.W.	Jan. 1
Alterations to Market Hall, Portmadoc	Whitley & Monkseaton U.D.C.	M. Thomas, Civil Engineer, Council Offices, Ynyscynhaiarn	do.
Street Works, &c.	Carrickfergus U.D.C.	J. P. Spencer, C.E., Council Offices, Whitley, Northumberland	Jan. 4
Footpath	Leeds Corporation	J. Boyd, Town Hall, Carrickfergus	do.
*Extension of Seacroft Hospital	Edmonton U.D.C.	City Engineer, Municipal-buildings, Leeds	do.
*Tar Paving at Pymmes Park	Willesden District Council	G. E. Eachus, Town Hall, Lower Edmonton	Jan. 6
*Steam Road Roller and Road Scarifier	Holyhead School Board	Council's Engineer, Dyne-road, Kilburn, N.W.	Jan. 7
Schools, Kingsland	Tynemouth Corporation	R. E. Pritchard, Bradford House, Holyhead	do.
Laying Main (12½ miles)	Aberystruth School Board	J. Mansergh, Civil Engineer, 5, Victoria-street, S.W.	do
Water Supply Works, Bromsgrove, Worcester	Hornsey U.D.C.	R. O. Seacome, Shire Hall, Worcester	Jan. 8
Schools, Cwmcelyn, Blaina, Mon	Commissioners of H.M. Works, &c.	R. L. Roberts, Architect, Abercarn	Jan. 13
*Road Making and Sewer Works	Bermondsey Council	Council's Engineer, Southwood-lane, Highgate, N.	Jan. 14
*Enlargement of Head Post Office, Plymouth	The Vicar and Committee	Secretary's Office, Storey's Gate, S.W.	Jan. 15
*Underground Conveniences	Bury Corporation	Borough Surveyor, Town Hall, Spa-road, S.E.	Jan 20
*Reseating of Nave, Parish Church, Brewood, Staffs	Chorlton Guardians	Ashton Veall, Architect, 84, Darlington-street, Wolverhampton	do.
*Central Tramway Depot	Corporation of London	Borough Engineer, Bury	do.
*Additional Cottage Homes, Styal, Cheshire	Moors & Robson's Brewery Co., Ld.	J. B. Broadbent, Architect, 15, Cooper-street, Manchester	Jan. 30
*Widening London Bridge	Mr. S. Worthington	City Surveyor, Guildhall	Feb. 17
Mansion, Hove, Sussex		Clayton & Black, Architects, 152, North-street, Brighton	No date
Rebuilding the Tally-ho Inn, Hull		Freeman & Co., Architects, 11, Carr-laue, Hull	do.
House, Thornton-in-Lonsdale, Ingleton		S. Worthington, Wheatsheaf Hotel, Ingleton	do
Hotel, Larne, Ireland		A. Gorton, Architect, 24, The Crescent, Morecambe	do.
House, Victoria-road, Penarth		Seddon & Carter, Architects, Cardiff	do.
Church, Cumming-street, Forres, N.B.	Clayton & Keymer School Board.	Ross & Macbeth, Architects, Queen's Gate Chambers, Inverness	do.
Wood Flooring at Schools, London-road, Burgess Hill	Normanton U.D.C.	C. Botham, Architect, 128, Queen's-road, Brighton	do.
Sewer, &c., Altofts-road		A. Hartley, Surveyor, County Chambers, Castleford	do.
Seventeen Cottages, Dinnington Colliery		Secretary, Seaton Burn Coal Co. A., Exchange Bldgs., Newcastle.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary	Application to be in
*Clerk of the Works	Southwark Guardians	3*l.* 13s. 6d. per week	Dec. 31
*Clerk of the Works	Warwick Guardians	3*l.* per week	Jan. 1
*Surveyor for the City Survey	Birmingham Corporation	120*l.*	Jan. 2

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. & x. *Public Appointments, pp.* xix.

PRICES CURRENT (*Continued*).

VARNISHES, &c.

	per gallon. £ s. d
Fine Elastic Copal Varnish for outside work	0 16 6
Best Elastic Copal Varnish for outside work	1 0 0
Best Elastic Carriage Varnish for outside work	0 16 0
Best Hard Oak Varnish for inside work	0 10 6
Best Extra Hard Church Oak Varnish for inside work	0 10 6
Fine Hard Copal Varnish for inside work	0 16 0
Best Hard Copal Varnish for inside work	1 0 0
Best Hard Carriage Varnish for inside work	0 16 0
Extra Pale Paper Varnish	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
Best French and Brush Polish	0 10 0

TO CORRESPONDENTS.

R. H. & S. (Amounts should have been stated.)

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

*** Owing to the Christmas holidays, the *Builder* will be published next week on Tuesday instead of Friday. All communications for the Editor must therefore reach our office not later than 10 a.m. on Monday morning.

* Denotes *accepted.* † Denotes *provisionally accepted.*

BARNSLEY.—For the execution of sewerage works, Elsecar, for the Hoyland Nether Urban District Council. Mr. W. P. Young, Surveyor, Town Hall, Hoyland, near Barnsley:—

James Moran	£161 18 4	J. S. Duncan	£136 16 5
G. H. Burrows	157 4 7	Isaac Hague, Hoyland*	115 13 3
M. Grantham	154 10 0		
M. O. Eyre	145 0 0		

BIRMINGHAM.—For the execution of private street works, Tudor-road, &c., Moseley, for the King's Norton U.D.C. Mr. Ambrose W. Cross, surveyor, 23, Valentine-road, King's Heath. Quantities by surveyor:—

John White, jun.	£744 4 0	Fitzmaurice & Co.	£507 8 0
Currall, Lewis, & Martin	570 12 9	Barnes & Co., Birmingham*	463 0 0
G. Trentham	539 0 3	Abel Cooper	460 16 6

BOURNEMOUTH.—Tramway works for the Corporation of Bournemouth. Mr. F. W. Lacey, Borough and Tramway Engineer :—

Contract No. 14.—Engine House, &c., and Chimney Shaft.

	Engine House.	Chimney Shaft.
	£ s.	£
Martin & Co.	16,326 10	2,829
Hoare & Sons	13,647 0	2,430
W. Hoare	12,819 0	2,397
F. Osman	12,382 0	1,953
Jenkins & Sons, Bournemouth	*11,719 0	1,949
Myles & Warner, Stalybridge	—	2,694
The Alphons Custodis Chimney Construction Co., Sheffield	—	*1,215

Contract No. 15b.—Car Sheds.

Cooke & Co.	£8,222	Jones & Sons	£7,748
F. Osman	8,150	Hoare & Sons	7,658
Jenkins & Sons	8,087	Jones & Seward, Bournemouth*	7,640
W. Hoare	7,810		

CROYDON.—For three shops and dwelling-houses in Mitcham-road, Croydon, under the supervision of Mr. Arthur L. Dartnell, architect and surveyor, 73, North End, Croydon :—

Smith & Son	£1,950	F. Sedgwick	£1,189
Simmonds & Co.	1,550	Ludlow & Martin	1,165
E. Goulder	1,385	W. Roberts	1,075

EALING.—For the erection of D'Eresby House, Ealing Common, W., for the Metropolitan Guarantee Society, Limited. Messrs. Palgrave & Co., architects, Westminster :—

J. Barker & Co.	£26,342	Mead & Burton	£18,360
Whitehead & Co., Ltd., Clapham†	19,450		

GT. BERKHAMSTED.—For proposed new offices, strongroom, and laboratory at the chemical works, for Messrs. William Cooper & Nephews. Mr. Charles H. Rew, architect, Gt. Berkhamsted :—

C. Brightman	£1,335	Honour & Son*	£1,178
H. & J. Matthews	1,240		

[Architect's estimate, £1,225.]

HOVE.—For paving works, &c., for the Town Council. Mr. H. H. Scott, Borough Surveyor :—

Parsons & Sons, 118, Church-road, Hove* £1,269

ILFORD.—For the erection of car-sheds, &c., for the Urban District Council. Mr. H. Shaw, C.E., 7, Cranbrook-road, Ilford :—

G. Sharpe, Gibbins-road, Lett-road, Stratford £5,937

KIRKLEY, LOWESTOFT.—For new Congregational church, South Cliff, Kirkley, Lowestoft. Messrs. George Baines & R. Palmer Baines, architects, 5, Clement's Inn, Strand, W.C. :—

	Estimate A. Church.	Estimate B. Tower.
Cornish & Gaymar	£2,200 10	£341
G. E. Hawes	1,767 0	320
J. Welhem	1,750 0	280
C. R. Cole	1,698 0	297
J. S. Smith	1,670 10	271
J. Ashby, Lowestoft	1,378 0	238

[Architects' estimate, £2,000.]

LONDON.—For new police-station, Bow-road :—

	Credit.	
Lascelles & Co.	£50	£17,135
Willmott Bros.	50	16,953
Higgs Hill	46	16,640
Patrick & Son	50	16,640
Lathey Bros.	30	16,570
Holloway Bros.	50	16,351
Howell J. Williams	10	16,287
Lawrance & Sons	30	15,981
Grover & Sons	40	15,783
Perry & Co.	27	15,500
Allen & Sons	—	15,400
H. Lovatt	50	15,275
T. Parker	—	15,192
Ashby & Horner	50	15,020
F. & H. F. Higgs	—	14,988

LONDON.—For the execution of water-supply works at workhouse, for the Bethnal Green Guardians. Mr. G. H. Hughes, engineer, 97, Queen Victoria-street, E.C. Quantities by the engineer :—

R. D. Batchelor	£6,733 18 10	Tilley & Sons, London, E.*	£5,615 3 10
Mayho & Haley	5,724 15 4	Timmins & Sons	5,422 16 6
D. R. Paterson	5,690 0 0		

[Twenty-seven other tenders for sections only.]

LONDON.—For alterations and additions to the infirmary kitchen, St. John's Hill, Wandsworth, for the Wandsworth and Clapham Guardians, S.W. Mr. Cecil Alexander Sharp, architect, 11, Old Queen-street, Queen Anne's Gate, S.W. :—

Huntley Bros.	£597	R. A. Jewell	£444
A. Leather	567	Dakin & Co., Putney, S.W.*	347
J. J. Richards	490		
F. Clarke	486		

LONDON.—For feed-water boilers at the Abbey Mills pumping station, for the London County Conncil :—

For the Seven Boilers of 100 lbs. Pressure.

Taylor & Sons	£160	each, or	£1,120
Tinker, Ltd.	140	,,	980
Tinker, Shenton, & Co.	123	,,	861
Spurr, Inman, & Co.*	104 10	,,	731 10

For the Three Boilers of 150 lbs. Pressure.

Taylor & Sons	£170	each, or	£510
Tinker, Ltd.	150	,,	450
Tinker, Shenton, & Co.	140	,,	420
Spurr, Inman, & Co.*	106 10	,,	319 10

HENDON.—For the following works for the Urban District Council. Mr. S. Slater Grimley, Engineer :—

	Edgware-road Surface Water Drain.	Stanley-road Sewer.	Boundary Wall at Offices.	Removal Steam Roller Shed.	Of Mortuary.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ford, C.	825 0 0	272 5 4	—	—	—
Dickson, J.	826 14 0	236 7 4	—	—	—
Paterson, D. R.	808 8 0	217 0 0	—	—	—
Weston & Hale, Harlesden	795 18 6*	197 11 0*	305 0 4	26 0 0	17 0 0
Judson, G. A.	—	—	355 13 6	42 0 0	24 0 0
Tout, Wm. Hendon	—	—	276 1 2*	21 0 0	12 10 0
Barton, C. C., W. Hendon	—	—	280 13 0	16 0 0*	10 0 0*

LONDON.—For the execution of Section A of the works to be done at the Crossness outfall in connexion with the extension of the main drainage system on the south side of the river Thames, for the London County Council :—

Cochrane & Sons	£124,949 10 0
Jones & Sons	115,699 9 0
Cooke & Co.	96,826 14 3
Bentley & Loch	82,597 4 0
Kirk & Randall	79,912 5 4
Squire & Co.*	73,980 2 7

LONDON.—For wiring and fittings for electric light installations at the Manchester-square, Bishopsgate, and Brompton fire stations, for the London County Council :—

Manchester-square Station.

C. Esson (informal)	£259 0 0
J. Sperati	378 0 0
Coleby & Co.	295 10 0
Peacock & Co.	280 0 0
Barlow Bros. & Co.	257 0 0
Weston & Co.	247 14 4
Graham & Biddle	240 0 0
J. H. Rake	226 10 0
The National Electric Wiring Co., Ltd.	221 9 0
G. W. Clarke	197 9 4
Jackson Bros.	177 8 6
Ellis, Potten, & Co.*	170 0 0

Bishopsgate Station.

C. Esson (informal)	£215 0 0
J. Sperati	313 0 0
Coleby & Co.	273 0 0
J. H. Rake	256 10 0
Peacock & Co.	247 0 0
Barlow Bros. & Co.	247 0 0
Weston & Co.	221 18 3
The National Electric Wiring Co., Ltd.	103 12 0
G. W. Clarke	168 7 6
Jackson Bros.	159 7 0
Ellis, Potten, & Co.*	150 0 0

Brompton Station.

C. Esson (informal)	£125 10 0
J. Sperati	186 0 0
Barlow Bros. & Co.	170 0 0
Coleby & Co.	165 0 0
Weston & Co.	148 14 0
Peacock & Co.	145 11 0
J. H. Rake	136 10 0
Graham & Biddle	120 0 0
National Electric Wiring Co., Ltd.	115 8 0
Ellis, Potten, & Co.	104 0 0
Jackson Bros.*	98 2 6

LONDON.—For the completion of King's Gardens, West Hampstead, N.W., for Mr. Herbert Kempson Reeves. Messrs. Palgrave & Co., architects, 28, Victoria-street, S.W. Quantities by Mr. C. E. Pease :—

Gray & Co., Shepherd's Bush £33,750

MIDDLESBROUGH.—For the execution of street works, for the Corporation. Mr. Frank Baker, Borough Engineer, Municipal Buildings, Middlesbrough :—

Sussex and South Streets.

D. & J. Stratton	£2,630 15 7	Crombie & Son	£1,862 3 2
Keighley & Riddiough	2,084 7 2	Smiles, Ltd.	1,824 17 9
A. E. Hobbs	2,042 6 1	J. G. Spooner, Stockton-on-Tees*	1,724 16 11
G. E. Simpson	1,993 10 0		

Marton-road and Wilson-street.

D. & J. Stratton	£2,738 2 8	J. R. Smiles, Ltd.	£5,154 8 3
Keighley & Riddiough	5,566 3 6	Crombie & Son	4,988 19 9
A. E. Hobbs	5,451 10 11	J. G. Spooner, Stockton-on-Tees*	4,716 4 7
G. E. Simpson	5,189 9 10		

Newport-road (from St. Paul's Church to the Borough Boundary).

D. & J. Stratton	£4,062 5 10	J. G. Spooner	£3,126 17 6
G. E. Simpson	3,387 10 0	Crombie & Son	3,100 18 9
Keighley & Riddiough	3,371 0 10	J. R. Smiles, Ltd., Middlesbrough*	3,070 14 7
A. E. Hobbs	3,215 16 8		

OTLEY (Yorks).—For the construction of a reservoir &c., Middleton, for the Urban District Council. Mr. John Waugh, C.E., Sunbridge-chambers, Bradford. Quantities by engineer :—

Wilson & Son	£74,661 0 0
T. Smith	56,750 13 7½
P. Drake	54,378 0 0
Arnold & Son, Doncaster*	49,500 0 0
W. Binns	47,500 0 0
Eagan & Sons	45,092 8 6
W. Brigg	44,500 0 0

RAMSEY (Hunts).—For new schools (mixed) and schoolhouse, for the School Board. Mr. J. G. Stallebras, architect, North-street, Peterborough. Quantities by the architect :—

R. Shanks	£6,258 0 0	J. Bridgefoot	£4,874 10 7
W. Wade	5,779 0 0	Parren & Son	4,836 14 6
F. B. Thackray	5,580 0 0	C. Wright	4,829 0 0
J. Cracknell	5,258 0 0	M. J. Allen	4,821 12 8
D. Gray	5,152 10 0	H. Watson	4,686 0 0
Thurley Bros.	5,145 0 0	J. Bateman, Ramsey*	4,487 0 0
R. J. Nichols	5,050 0 0	Hipwell & Co.	4,484 0 0
J. Lucas	5,050 0 0		
J. Guttridge	4,905 0 0		

LONDON SCHOOL BOARD TENDERS

At the last meeting of the London School Board, the Works Committee submitted the following lists of tenders. Mr. T. J. Bailey is the Board's Architect :—

* *Recommended for acceptance.*

ADYS-ROAD SCHOOL (East Dulwich).—For refitting boys' and girls' lavatories :—

Lawrance & Sons	£145	Baylis & Francis	£100
G. Parker	130	G. Kemp	97
H. Groves	125	Falkner & Sons*	91

EVERINGTON-STREET SCHOOL (Fulham).—For executing repairs to furniture :—

Galbraith Bros.	£111 16 5
Hammer & Co., Ltd.	109 19 0
H. Bouneau	87 5 0
General Builders, Ltd.	86 7 5
London School Furniture Co.	79 1 1
T. Cruwys	73 11 0
H. J. Williams*	63 6 2

GREENING-STREET SITE (Abbey Wood).—Re-erecting iron buildings to be removed from the Santley-street site, Brixton :—

Hawkins & Co.	£1,850	Mitson & Harrison	£1,630
W. Harbrow	1,768	Smith & Co.*	1,535

HAVERSTOCK HILL SCHOOL.—New lavatories for boys' and girls' departments :—

T. Cruwys	£636	C. W. Killingback & Co.	£420
G. S. S. Williams & Son	626	Marchant & Hirst*	415
Stevens Bros.	596		

HIGH-STREET.—Interior cleaning :—

A. W. Derby	£244 0	Gibb & Co.	£218 0
Dolman & Co.	221 0	A. J. Sheffield	204 0
J. T. Robey*	£203 10		

HIGH-STREET SCHOOL (Plumstead).—For office inside building :

W. J. Howie	£132 0	H. Groves	£95 0
G. Parker	130 0	G. Kemp	78 0
Baylis & Francis	120 0	E. Proctor*	49 10

HEAD OFFICES OF THE BOARD.—For electri light pendants in the Evening Continuation Schools Department :—

Peto & Radford, Ltd.	£45 0	J. C. Christie	£39 15
Rashleigh, Phipps, & Co.	44 0	Lund Bros. & Co.*	34 13

MITCHAM-LANE SITE.—For re-erection of iron buildings to be removed from the Fulham Palace-road site :—

Humphreys, Ltd.	£1,810	J. McManus	£1,598
T. Cruwys	1,780	Smith & Co.	1,456
Mitson & Harrison	1,649	Hawkins & Co.	1,450
J. & W. T. Hunter	1,620	Leather & Sons*	1,338

REDDINS-ROAD SCHOOL (Peckham).—For sanitary and drainage work :—

Martin, Wells, & Co., Ltd.	£3,024 0 0	J. & C. Bowyer	£2,667 0 0
Rice & Son	2,972 0 0	Johnson & Co., Ltd	2,584 0 0
Maxwell Bros., Ltd.	2,896 3 5	Falkner & Sons	2,577 0 0
W. Downs	2,697 0 0	G. Parker*	2,491 0 0

SETTLES-STREET SCHOOL (Stepney).—For refitting girls' and infants' offices :—

Martin, Wells, & Co., Ltd.	£749 0 0	G. Neal	£540 0 0
Falkner & Sons.	633 0 0	F. & F. J. Wood	499 0 0
R. P. Beattie	589 6 5	J. T. Robey	489 10 0
		Gibb & Co.*	440 0 0

[See also next page

Running Contracts for the supply of various articles of furniture, &c. :—

Contractors.	Cupboards (Modelling.)	Blackboards (Large) for K.G. Stands.	Drawing Stands, Kindergarten.	Bench Cheeks (No. 1).	Bench Cheeks (No. 2).	Bench Stops (No. 1).	Bench Stops (No. 2).	Bench Stops (No. 3).
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H. Bouneau ..... each	*18 0 0	*0 15 6	*2 0 0	0 1 6	0 1 5	0 0 2¾	0 0 2¾	0 0 4
Bruce, Croom, & Co... each	18 5 0	1 3 6	2 9 6	0 1 10	0 1 7	0 0 2½	0 0 3	0 0 3½
T. Cruwys ..... each	23 19 0	—	—	—	—	—	—	—
Educational Supply Association, Ltd. ..... each	23 0 0	—	—	—	—	—	—	—
G. M. Hammer & Co., Ltd. each	20 10 0	1 2 0	2 3 6	0 2 6	0 2 3	0 0 3	0 0 4	0 0 6
Lonnie & Co. ..... ,,	22 10 0	—	—	—	—	—	—	—
W. Martin..... ,,	—	1 6 0	2 15 0	0 1 6	0 1 4	0 0 2½	0 0 3	0 0 5
E. Spencer & Co. .... ,,	—	1 19 0	4 0 0	*0 0 8	*0 0 7	*0 0 1	*0 0 1½	*0 0 2½
Wriuch & Sons..... ,,	—	1 4 0	2 10 6	0 1 2	0 1 0	0 2 3	0 3 3	0 4 0

Digging and planting borders, &c., at the following schools :—

Contractors.	Old Woolwich-road.	Shillington-street.	Surrey-lane.	Tooting Graveney.	Warple-way.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Cutbush & Son	6 2 0	6 5 0	2 6 0	3 0 0	3 0 0
A. Durrant.....	4 12 0	7 0 0	3 5 0	4 0 0	3 10 0
G. Footer	*4 5 0	*4 15 0	*1 19 6	2 11 6	2 11 0
R. Neal	5 7 0	6 15 0	2 4 8	*2 7 6	*2 9 6
Williams & Son.....	6 3 0	8 4 0	3 15 0	5 0 0	4 2 6

RUNNING CONTRACT FOR REPRODUCING DRAWINGS :—

	s. d.	s. d.	s. d.	s. d.
Cook & Hammond....	17 0	—	—	—
Stanley & Co., Ltd. ..	13 4	—	—	—
London Drawing and Tracing Office.....	12 8	12 0	10 8	8 0
Norton & Gregory ..	9 0	6 10	6 0	—
Vincent Brooks, Day, & Son, Ltd.....	10 2	7 11	4 3	—
A. P. Mallandain	7 10	6 8	6 6	—
Photo Printing Paper Co.....	7 6	—	—	—
Saunders & Co.....	5 2	—	—	—

The samples and schedules of prices submitted by the various contractors have been carefully examined by the Architect, who is of opinion that the system adopted by Messrs. W. N. Saunders & Co., and the Ferro-gallic system of Messrs. Norton & Gregory, would be suitable for the Board's work. The Committee accordingly recommend that the tenders of these two firms should be accepted, in order that there may be no delay in carrying out the work required.

TIMBERCROFT-ROAD SITE (Plumstead). — For providing two new iron buildings, and for re-erecting one iron building to be removed from the Trafalgar-square site :—

Rowell & Co.	£3,872	Humphreys, Ltd. ..	£1,900
T. Cruwys.....	2,200	W. Harbrow.....	1,850
Hawkins & Co.	1,950	Smith & Co.*	1,830

TOWNSEND-STREET SCHOOL (Old Kent-road).—For stepped flooring, partitions, &c. :—

London School Furniture Co.	£1,125	Marsland & Sons	£660
Spencer & Co.	834	Rice & Son	619
Wake & Dean, Ltd...	680	Garrett & Son.....	609
		E. Triggs*	572

WINSTANLEY-ROAD INFANTS' SCHOOL (Battersea).—For hall and other improvements; providing three new classrooms for 60, 60, 66; converting two existing classrooms into hall, and providing additional lighting; providing teachers' room; converting teachers' present room into additional cloakroom; providing infants' lavatory, water-closets, and urinal; forming new entrance, and enclosing, draining, and tar-paving the additional land. The revised accommodation of the infants' department, on the completion of the improvements, will be for 428 children, being a net gain of 41 places :—

J. Marsland & Sons	£2,978	E. Triggs	£2,622
Holloway Bros.	2,911	Stimpson & Co.	2,600
W. Downs	2,905	J. & M. Patrick	2,499
Lathey Bros.	2,837	F. & H. F. Higgs ..	2,481
E. P. Bulled & Co...	2,749	Johnson & Co., Ltd.	2,450
J. Garrett & Son....	2,730	W. H. Lorden & Son*	2,388
J. Carmichael	2,680		

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GLASGOW : 47 and 49, ST. ENOCH-SQUARE.
BRISTOL : ASHTON GATE WORKS, CORONATION-RD

DESIGN FOR AN
EMBROIDERED HANGING FOR
A MUSIC-ROOM.
By Miss Mabel B. Keighly.

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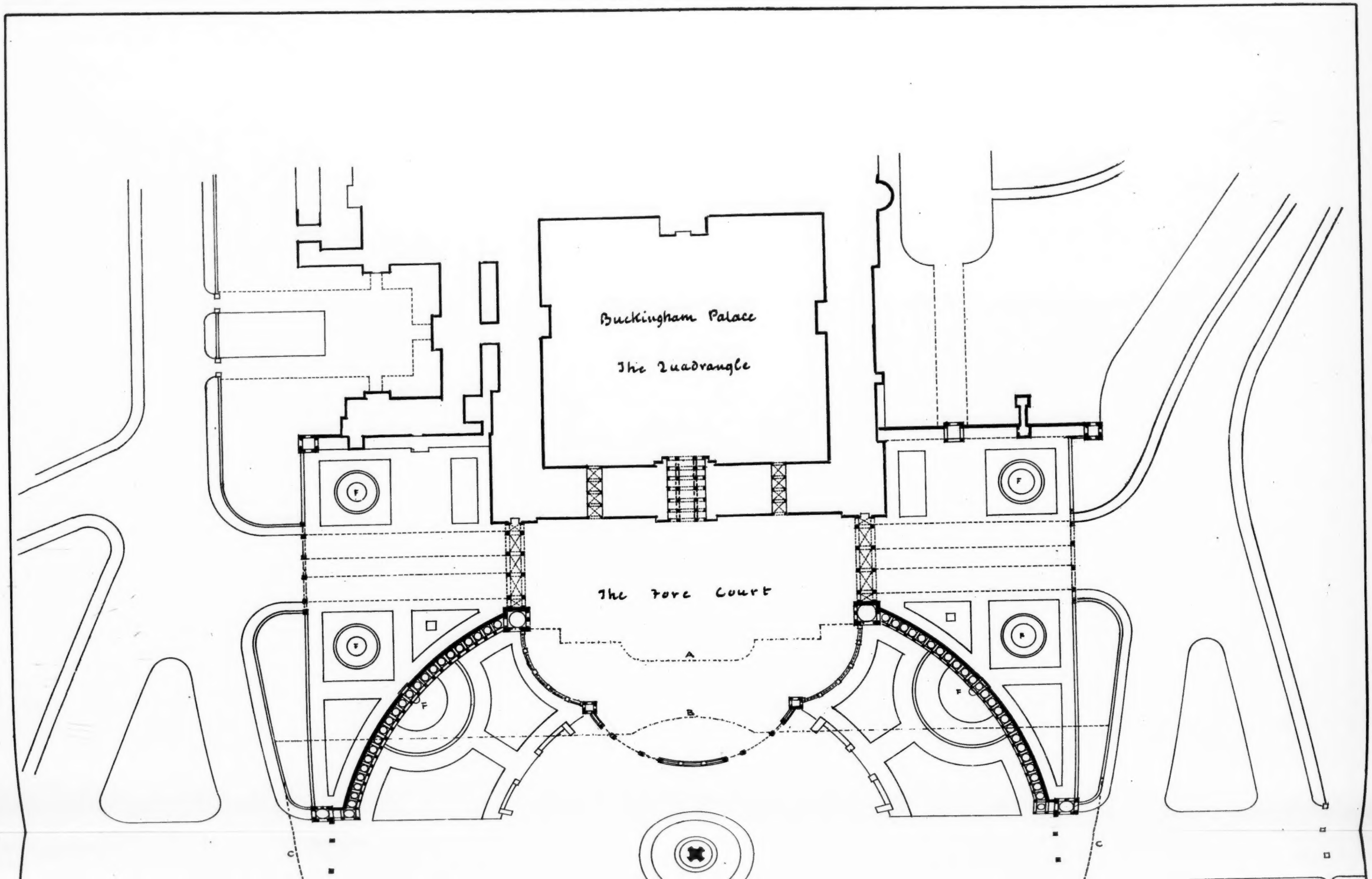
Buckingham Palace
The Quadrangle
The Fore Court
A
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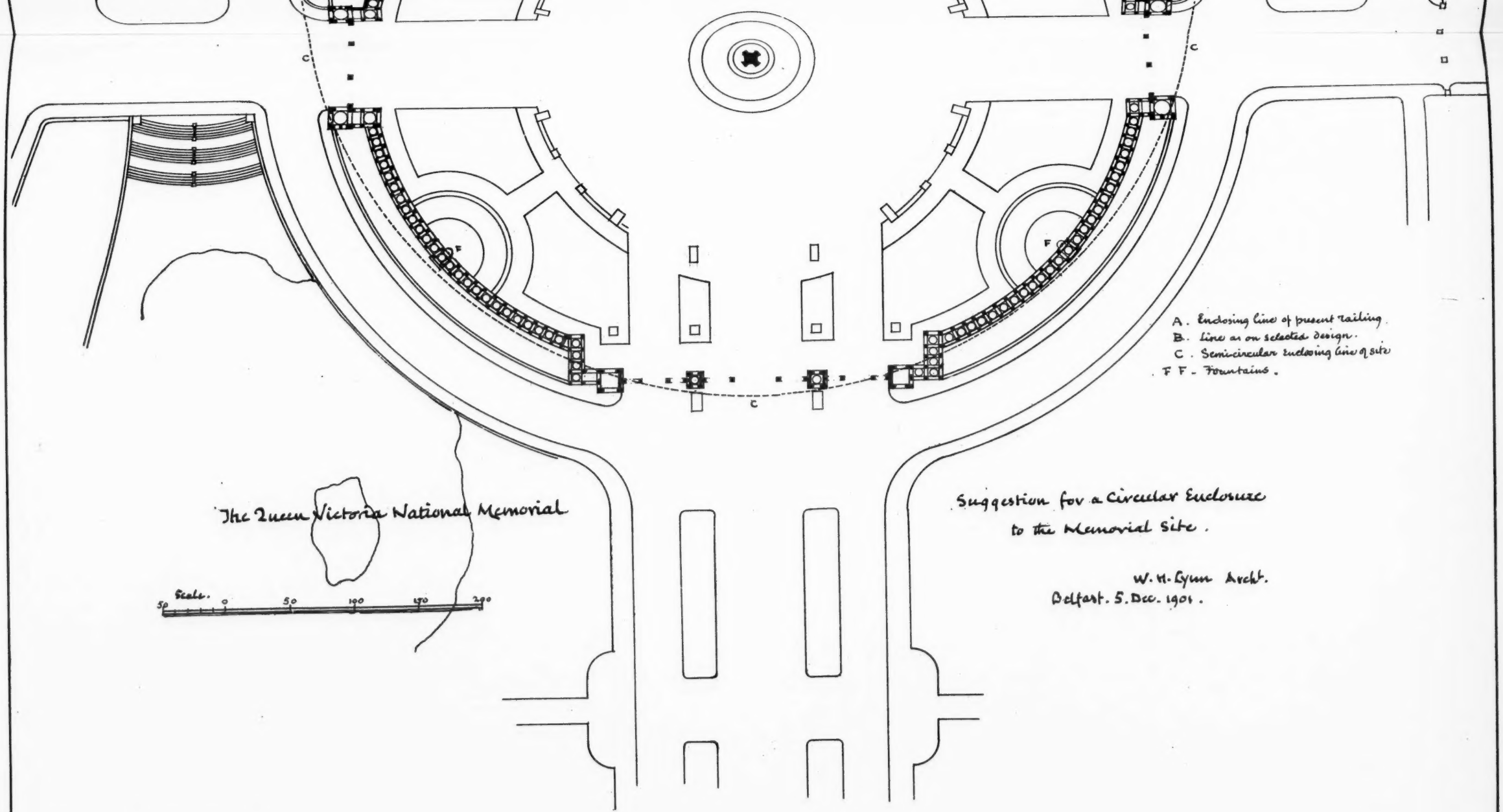


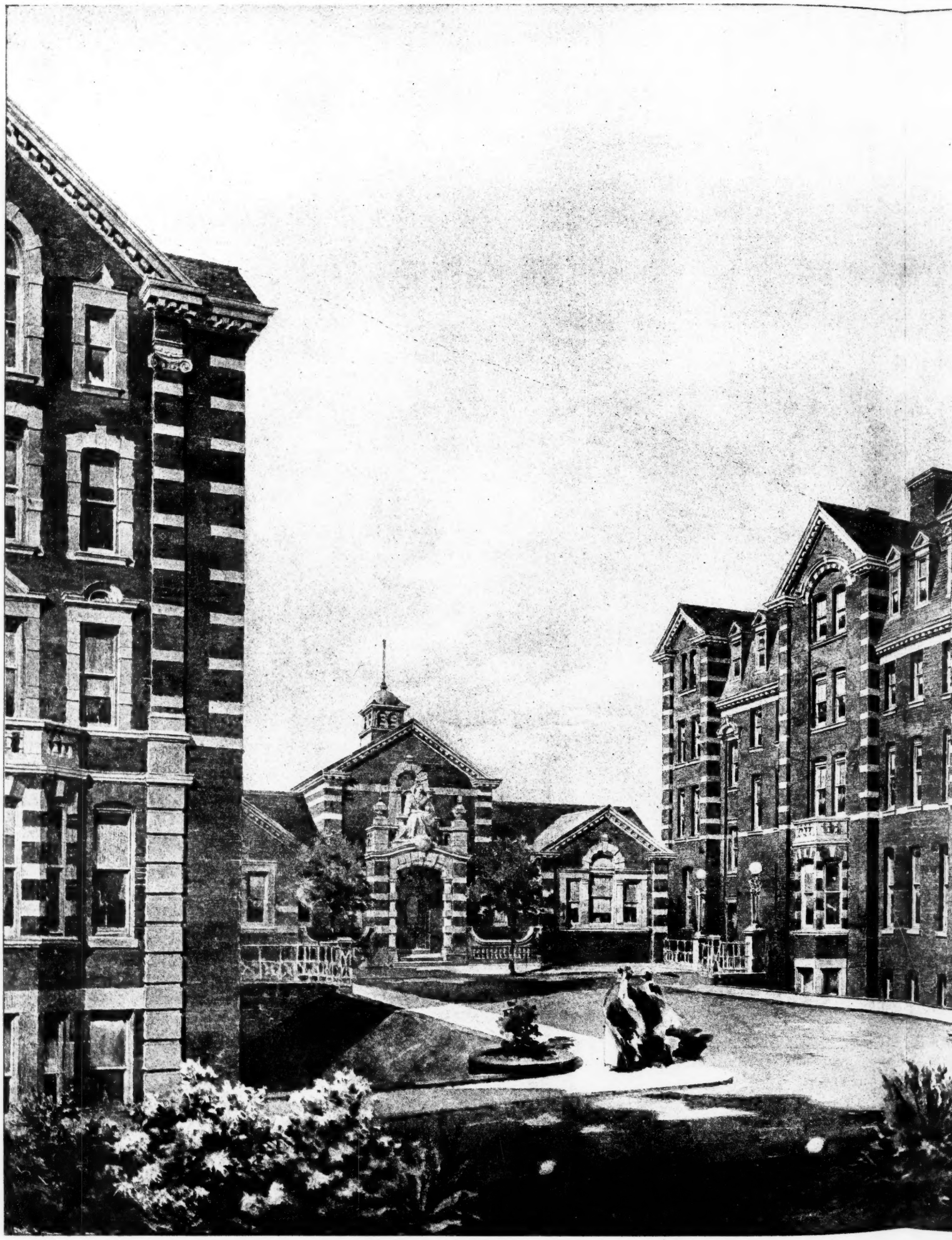
The Queen Victoria National Memorial

Scale.
50 0 50 100 150 200

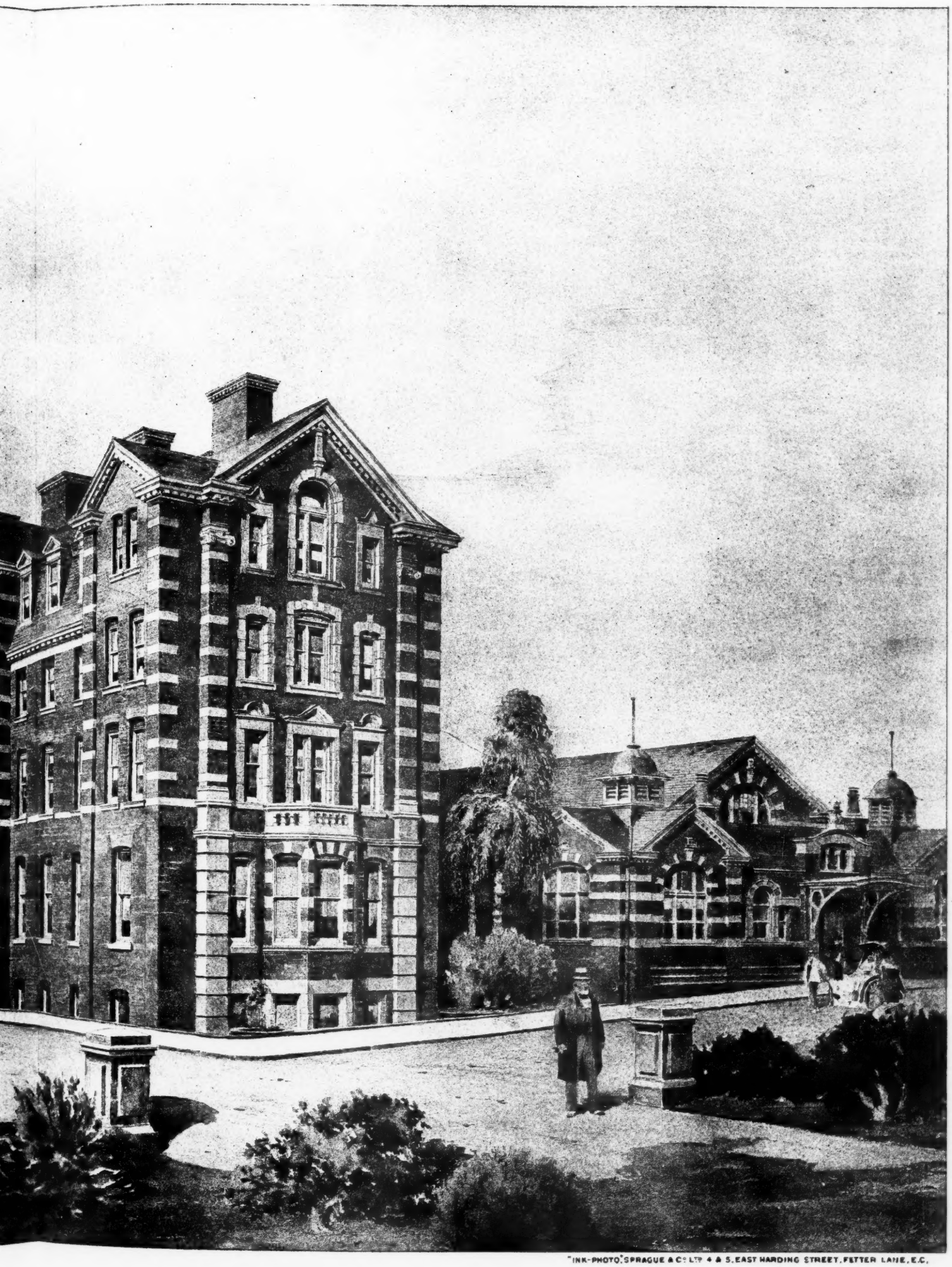
Suggestion for a Circular Enclosure to the Memorial Site.

W. H. Lynn Archt.
Belfast. 5. Dec. 1901.

PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5. EAST HARDING STREET, FETTER LANE. E.C.



THE ROYAL VICTORIA HOSPITAL, BELFAST: NURSES' HOME & EXTERN DEPA



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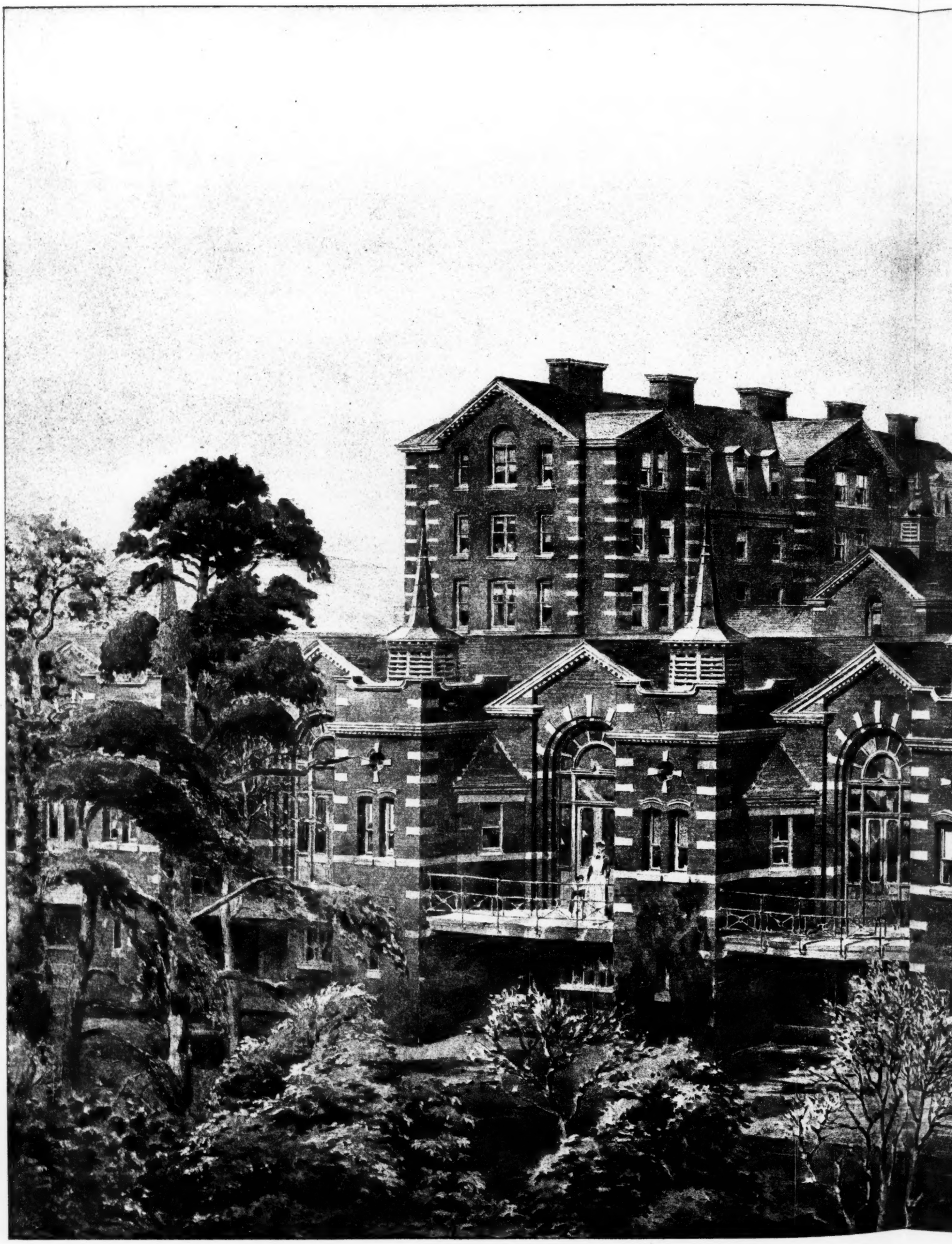
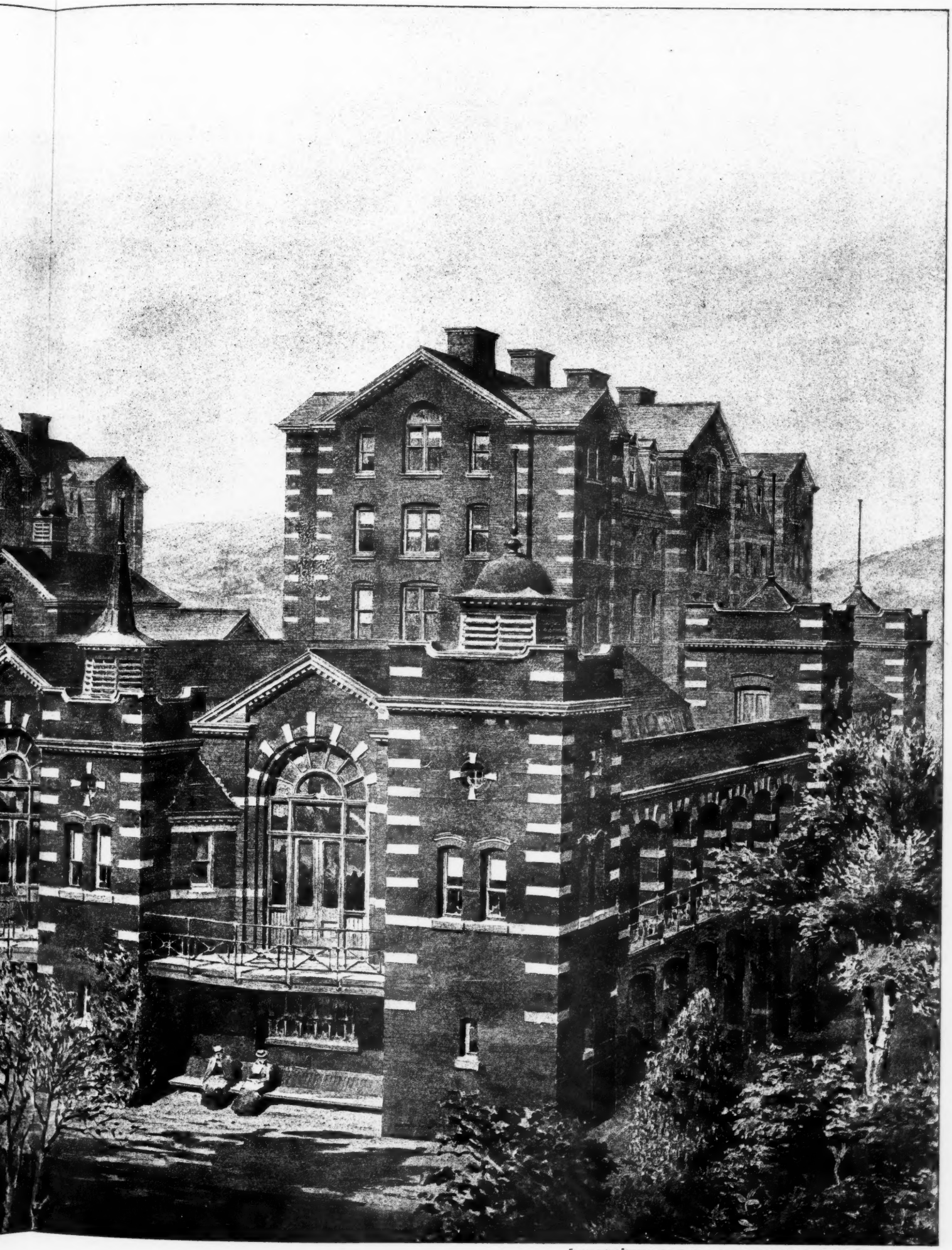
EXTERN DEPARTMENT.—MESSRS. WILLIAM HENMAN & THOMAS COOPER, ARCHITECTS.



THE ROYAL VICTORIA HOSPITAL, BELFAST: THE WARDS.—M



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WARDS.—Messrs. William Henman & Thomas Cooper, Architects.